"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

20-5-60/67

AUTHOR GERSHENZON, S.

TITLE The Polyhedral Virus of Galleria mellonella L. (Poliedrennyy virus bol'shoy voshchinnoy moli (Galleria mellonella L.) - Russian)

PERIODICAL Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 5, pp 1161-1162, (U.S.S.R.)
Received 7/1957 Reviewed 8/1957

ABSTRACT The polyhedral disease of the honeycomb moth (Galleria mellionella L.) described by O.I. SHVETSOVA lacked a describtion of its virus. The author examined the polyhedrons formed in the nuclei of the diseased caterpillars under a light- and electron microscope in a fixed and colored state. They are rather regular and cube-shaped, and their aberage size is about 2 . It is easier to dye the these polyhedra with histological dyes and they are more quickly dissolved by means of alkalis than the polyhedra of the silk worm. The virus particles contained therein are rod-shped and of a size of 300 x 30 m . Unlike what is the case with most other polyhedral viri particles occur singly and not in bundles. According to Shvetsova the Galleria virus is not infectious for the Chinese Antherea pernyi, but in the case of the smaller honeycomb moth (Achroea grisella F) it causes polyhedra. The author proved that the silk moth (Bombyx mori), the gipsy moth (Ocneria dispar). and the Malocosoma neustria are immune against this virus, but he found great susceptibility in the case of se-

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The Polyhedral Virus of Galleria mellonella L. 20-5-60/67

veral types of nymphalids both per os as also subcutaneously. The latter experiments again confirmed clearly that the shape and the average size of the polyhedra are not deter mined by the genus to which the insect belongs, but by the virus specifity. Also when passing repeatedly through an unspecific caterpillar the character of the polyhedron is not changed. At the present stage of knowledge concerning polyhedral viri it seems doubtful whether they should be given specific names. If, however, this kind of name is loked upon as purely conventional, they might be of certain use for practical work. The author suggests the following name for the Galleria virus: Borellina galleriae sp. nov. (1 illustration from 4 microphotos, 4 Slavic references)

ASSOCIATION Zoological Institute of the Academy of Science of the USSR.
PRESENTED BY SHPOSHNIKOV, V.N., Member of the Academy.
SUBMITTED 14.5.1956.
AVAILABLE Library of Congress.
Card 2/2

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

USSR / Virology. Human and Animal Viruses. Insect Viruses. I

Abs Jour: Ref Zhur-Biol., No 5, 1959, 19348.

Author : Gerstenzon, G.
Inst : Not given.
Title : Recent Data on the Pathogenesis of Polyhedrosis of Insects.

Orig Pub: Vopr. virusologii, 1958, No 2, 97-101.

Abstract: Artificial prolongation of hibernation of the eggs of the mulberry silkworm increases the incidence of jaundice in older caterpillars and chrysalides. Cytologic investigation of caterpillars developed from these eggs shows that in the embryonal stage there is activation of the latent virus which had been present in individual cell nuclei; after disruption of these nu-

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

17(0)

AUTHORS: Gershenzon, S. M., Kiseleva, I. A. SOV/20-123-3-49/54

TITLE: The Induction of Controlled Hereditary Variations in Drosophila Melanogaster (Vyzyvaniye napravlennykh nasledstvennykh izmeneniy u Drosophila melanogaster)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 3, pp 554-557 (USSR)

ABSTRACT: The first author (Refs 1,2) suggested, about twenty years ago, that the most promising way for the induction of controlled artificial mutations must lead over an experimental change of the nuclein metabolism of the organism. For this purpose, a preparation of desoxy-ribonucleic acid (DNA) was added to the food of the larvae of Drosophila. Thus it is possible to produce a great number of mutations. They concern preponderantly the structure of the wings. Because of the principal importance of the problem whether physical and chemical mutagenic factors are only capable of accelerating the natural process of mutation or of influencing also the character of the forming mutations, the previous experiments were repeated on a larger scale. Only afterwards, the processes causing the controlled mutagenic influence of the DNA shall

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be investigated more thoroughly and analogous methods shall be tried on other organisms. The methods were similar to those of the earlier investigation (Ref 3). The males bred on a culture medium containing 12-13% of DNA-sodium salt (according to Neyman, Ref 5) were interbred with foreign females $\hat{f}y$: the F_1-males were again interbred with such foreign females. The three series of tests performed gave consistent results. It can be seen from tables 1 and 2 that the offsprings of the males used in this experiment exhibited far more mutations than those of the control males. Especially numerous mutations occurred among the F_1-males of the test series. This suggests a mutagenic effect of the DNA. This variability was maintained in the 2nd generation as well and decreased in the third one. The investigation of 298 sex chromosomes by means of the Clb method gave not a single recessive lethal factor. The present paper completely confirmed the results obtained years ago. Many visible mutations took place, most of which were observed on the wings. The frequency of the sex-linked lethal factors either does

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The Induction of Controlled Hereditary Variations in Drosophila Melanogaster

SOV/20-123-3-49/54

not increase at all or only to a little extent. The mutagenic effect of the DNA-preparation is protracted, viz. it displays some after-effect specific for chemical mutagenic factors. There are 1 figure, 2 tables, and 5 references, 3 of which are Soviet.

ASSOCIATION: Institut zoologii Akademii nauk USSR (Institute of Zoology, AS, UkrSSR)

PRESENTED: July 9, 1958, by A. V. Palladin, Academician

SUBMITTED: July 1, 1958

Card 3/3

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

17(19) SOV/11-59-4-22/27

AUTHOR: Gershenzon, S.M.

TITLE: New Data on the Influence of Cobalt on "Spontaneous" Jaundice in the Silkworm

PERIODICAL: Dopovidi Akademii nauk Ukrains'koi RSR, 1959, Nr 4 pp 439-441 (USSR)

ABSTRACT: Developing further his study of subject matter, set forth in his works [Ref 1 and 2], the author experimented on the female silkworms of US-1 species, giving them injections of 0.02ml of sterile 1% water solution of $CoSO_4$. He established that such injections result in a decrease in the frequency of activation of the latent virus of nuclear polyhedrosis in their offsprings. This influence is seemingly confined to the early stages of development and later diminishes or vanishes altogether. There are

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SOV/21-59-[illegible]-22/27

How Data on the Influence of Cobalt on "Spontaneous" Jaundice in the Silkworm

[illegible] tables and 2 references, 1 of which is Soviet and 1 Czechoslovakian.

ASSOCIATION: Institut zoologii AN UkrSSR (Institute of Zoology of the AS UkrSSR)

PRESENTED: By V. G. Kas'yanenko, Member of the AS UkrSSR

SUBMITTED: December 15, 1958

Card 2/2

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

30(1) SOV/21-59-5-23/25

AUTHORS: Gershenzon, S.M., Karpov, A.Ye. and Kudra, M.S.

TITLE: On the Activation of Silkworm Polyhedral Virus by Fluoride Treatment

PERIODICAL: Dopovidi Akademii nauk Ukrains'koi RSR, 1959, Nr 5, pp 550-553 (USSR)

ABSTRACT: The Vago's [Ref. 3-5] method of activating the latent virus of silkworm nuclear polyhedrosis (jaundice) by adding fluoride compounds to the food of larvae in order to eliminate carriers of the latent virus, was put by the authors to test. It was found out that such treatment results in an activation of the latent virus in only some of the individuals having it and only when they had been weakened before by unfavorable ecological conditions. A further increase of dosage of fluoride salts proved to be harmful to the larvae and led to perdition from bacterial diseases and physiological debility. A table on page 551 shows the results of the experiments. There is 1 table

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SOV/21-59-5-23/25

On the Activation of Silkworm Polyhedral Virus by Fluoride Treatment

and 6 references, 1 of which is Soviet and 5 Italian.

ASSOCIATION: Institut zoologii AN UkrSSR (Institute of Zoology of the AS UkrSSR)

PRESENTED: By V.G. Kas'yanenko, Member of the AS UkrSSR

SUBMITTED: December 29, 1958

Card 2/2

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

16(1)

AUTHOR: Gershenzon, S. SOV/20-128-3-52/58

TITLE: Mutation of Polyhedral Viruses

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 3, pp 622-625 (USSR)

ABSTRACT: As is known, the polyhedral protein crystals formed in the illness of various species of Lepidoptera in the nucleus have a certain shape characteristic of every species. As the author had proved before (Ref 1 a, b, g), these differences in shape of the polyhedra are not caused by the species peculiarities of the hosts but by specific properties of the viruses. Several authors, however, observed, in the tissues of almost every species of insects, single nuclei with deviating atypical polyhedra among numerous polyhedra of a shape typical of the respective virus (Refs 1 v,2,3). This was also observed by the author. For several reasons, he assumed that this was a case of virus mutation (Ref 1 b). This assumption was confirmed by the following experiments. The author infected pupae of the Chinese oak silk moth (Antheraea pernyi Guer.) by polyhedral injections of the corresponding species. Its hemolymph was taken at a point of time when the first free polyhedra had appeared. The hemolymph

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was diluted with sterile water ($1 \cdot 10^7$ - $1 \cdot 10^8$), and injected into pupae of the same species (0.05 ml each). After 9-11 days, 20-40% of these pupae fell ill with polyhedral disease. The majority of the pupae showed the usual picture: polyhedra of a shape typical of this species of moths: tetragontritetrahedral with rounded corners (Fig 1 a, b). Only very few cells were found with nuclei containing an atypical shape of polyhedra. Mostly they were hexahedral (cubiform)(Fig 2). But in one of several hundred pupae infected in the above-mentioned manner, about 90% of the nuclei contained distinctly cubiform polyhedra. By further infections, several pupae with only cubiform polyhedra could be obtained. Thus, a strain of this varying virus was isolated. In further passages, it maintains its quality of producing cubiform polyhedra. Although the viruses are equal in some properties (Fig 3), some differences were ascertained. The varying strain mostly forms, in the nuclei, a great number of small polyhedra. The period between infection and death seems to last longer in the varying virus. The infection by the latter at lower temperatures (12-16°) takes place more easily.

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

Mutation of Polyhedral Viruses SOV/20-128-3-52/58

Infection by a mixture of the two viruses at a lower temperature leads to the development of varying polyhedra in most nuclei. A romutation of polyhedra was also ascertained. Atypical polyhedra of a different shape were also observed. A monophyletic descent of the viruses is probable. There are 3 figures and 4 references, 1 of which is Soviet.

ASSOCIATION: Institut zoologii Akademii nauk USSR (Zoological Institute of the Academy of Sciences, UkrSSR)

PRESENTED: June 1, 1959, by A. V. Palladin, Academician

SUBMITTED: May 28, 1959

Card 3/3

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, Sergey M. (Prof.) Kiev.

"Latency in Insect Viruses."

"Some Physiological Aspects of the Multiplication of Polyhedral Viruses."

reports presented at the Int. Congress of Entomology,
Vienna, Austria, 17-25 Aug 1960.

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, S.M.; KOK, I.P.; VITAS, K.I.; DOBROVOL'SKAYA, G.N. [Dobrovol's'ka, H.M.]; SKURATOVSKAYA, I.N. [Skuratovs'ka, I.N.]

Formation of a virus containing deoxyribonucleic acid by a ribonucleic acid host. Dop. AN URSR no. 12:1638-1641 '60. (MIRA 14:1)

1. Institut zoologii AN USSR. Predstavleno akademikom AN USSR V.G. Kas'yanenko.

(Silkworms) (Nucleic acids) (Viruses)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, S.M.

Geometric form of intranuclear inclusions in polyhedrosis in insects. Vop. virus. 5 no. 1:101-104 Ja-F '60. (MIRA 14:4)

1. Otdel genetiki Instituta zoologii Akademii nauk Ukrainskoy SSR.

(VIRUS DISEASES)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, S.M.

Study of a mutant strain of the virus of nuclear polyhedrosis of antheraea perny. Vop. virus. 5 no. 6:720-725 N-D '60. (MIRA 14:4)

1. Institut zoologii Akademii nauk Ukrainskoy SSR, Kiyev. (VIRUSES)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, S.M.; KOK, I.P.; SAMOSH, L.V.; TURKEVICH, I.M.; FEDOROVA, I.Ya.

An attempt to induce genetic transformations in animals by desoxyribonucleic acid and desoxyribonucleoprotein. Zhur. ob. biol. 21 no.5:387-389 S-O '60. (MIRA 13:9)

1. Institut zoologii Akademii nauk Ukrainskoy SSR, Moskva.
(DESOXYRIBONUCLEIC ACID) (ZOOLOGY--VARIATION)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, S.M.

Bibliography of Russian works on virus diseases of insects.
Ent. obozr. 39 no.2:487-493 '60. (MIRA 13:9)
(Bibliography--Insects--Diseases)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, S.M., prof.; KOK, I.P.

A most important problem in biology. Priroda 49 no.5: 54-56 My '60. (MIRA 13:5)
(Nucleic acids)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

Papers submitted for the 10th Pacific Science Congress, Honolulu, Hawaii 21 Aug-6 Sep 1961.

BAKSHIN, A., The Leningrad Forestry Engineering Academy imeni S. M. Kirov. Invited to give a paper in the Symposium on Forest Invent ries (Section V.B.1).

DEPOCHINSKIY, B. L., Institute of Geography, Academy of Sciences USSR. Invited to give a paper on meteorology in The Matthew Fontaine Maury Memorial Symposium for Antarctic Research (Section VII.D.1).

[illegible], Institute of Zoology, Academy of Sciences USSR. Invited to give paper in the Symposium on Crop Pests and Biological Control (Section III.D.1).

[illegible] S., Institute of Animal Morphology imeni A. N. Severtsov. Invited to give a paper in the Bering Arc Relationships session in the Symposium on Pacific Basin Biogeography (Section III.A.3.a).

GORSHKOV, Georgiy S., Volcanological Laboratory, Academy of Sciences USSR. Invited to participate in discussions of the Symposium on Volcanics and Plutonics in Relation to Types of Crustal Deformation. (Section VII.C.3).

[illegible], Institute of Oceanology. Invited to give paper in Symposium on Algae and their Productivity in the Pacific Basin Region (Section III.A.2).

KORT, V. G., Director, Institute of Oceanology. Invited to give paper in The Matthew Fontaine Maury Memorial Symposium for Antarctic Research (Section VII.D.1)

KOZLOVSKAYA, Irina P., Institute of Physics of the Earth imeni O. Yu Schmidt. Invited to give paper in Symposium on The Earth's Crust in the Pacific Basin (Section VII.C.2)

[illegible], Far Eastern Affiliate imeni V. L. Komarov, Academy of Sciences USSR. Invited to give paper in session on Bering Arc Relationships in Symposium on Pacific Basin Biogeography (Section VI.E.3.a)

MAGNITSKIY, Vladimir A., Institute of Geophysics, Academy of Sciences USSR. Invited to give paper in Contributed Papers Session of Division of Solid Earth Sciences (Section VII.C)

MAKSIMOV, Igor V., Lenin's Place 3, Apt. 18, Leningrad. Invited to participate in Symposium on Tsunamis (Section VII.C)

MAZNEV, Sergey P., Prof., Pedagogical Institute imeni V. I. Lenin, Moscow. Invited to give paper in session on Bering Arc Relationships in Symposium on Pacific Basin Biogeography (Section VI.E.3.a)

[illegible], Dr., Faculty of Physics, Moscow State University. Invited to give paper in Symposium on Radioactive Tracers in Oceanography (Section VII.B)

[illegible], Valentin S., Chair of Forestry, The Agricultural Academy imeni K. A. Timiryazev. Invited to give paper in Symposium on Forest Fire Research (Section V.B.1)

NASS, Sydney J., Institute of Oceanology. Invited to present a paper in the Contributed Papers Session of the Division of Marine Biology and Fisheries (Section III.C)

[illegible], A., Institute of Botany imeni V. L. Komarov. Invited to give paper in the session of Bering Arc Relationships of Symposium on Pacific Basin Biogeography (Section VI.E.3.a)

SOCHAVA, Viktor, Institute of Botany imeni V. L. Komarov. Invited to give paper in the session of Bering Arc Relationships of Symposium on Pacific Basin Biogeography (Section VI.E.3)

[illegible], O. I., All-Union Institute of Plant Protection. Invited to give paper in Symposium on Crop Pests and Biological Control (Section I.A.1.b)

[illegible], S. A., Institute of Permafrost Studies. Invited to give paper in The Matthew Fontaine Maury Symposium for Antarctic Research (Section VII.D.1)

STEGANT, Boris, Institute of Zoology. Invited to give paper in the session of Bering Arc Relationships of Symposium on Pacific Basin Biogeography (Section VI.E.3.a)

[illegible], Boris A., Institute of Botany imeni V. L. Komarov. Invited to give paper in the session of Bering Arc Relationships of Symposium on Pacific Basin Biogeography (Section VI.E.3.a)

[illegible], A. I., Institute of Botany imeni V. L. Komarov. Invited to give paper in the session on Bering Arc Relationships of Symposium on Pacific Basin Biogeography (Section VI.E.3.a)

[illegible], Andrey A., Department of Plant Anatomy and Plant Physiology, The Leningrad Forestry Engineering Academy S.M. Kirov. Invited to give paper in Symposium on Wood Anatomy and Dendrology (Section III.A.7)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, S. M., KOK, I. P., VITAS, K. I., DOBROVOLSKAYA, G. N., SKURATOVSKAYA, I. N., (USSR)

"DNA Containing Virus Formation with the Acid of Host RNA."

Report presented at the 5th Int'l. Biochemistry Congress, Moscow, 10-16 Aug 1961.

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, S.M.

The phenomenon of latency in polyhedral viruses of insects.
Zhur. ob. biol. 22 no.1:32-41 Ja-F '61. (MIRA 14:1)

1. Institute of Zoology Academy of Sciences of the Ukrainian S.S.R.
(VIRUSES) (INSECTS--DISEASES)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, S., doktor biolog.nauk

Code of heredity is deciphered. Nauka i zhyttia 12 no.9:20-21 S '62. (MIRA 16:1)

(GENETICS) (NUCLEIC ACIDS)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, S.M.

10

GALSTYAN, Alesha Shmavonovich, Laboratory of Agrochemistry, Academy of Sciences Armenian SSR, Yerevan - "Fermentation and respiration as indices of biological activity and soil fertility" (Section B, Symposium V)

GERSHENZON, Sergey M., Institute of Zoology, Academy of Sciences Ukrainian SSR, Kiev - "Role of ecological and physiological factors in outbreaks of nuclear polyhedroses in insects" (Section B, Symposium III)

KASHKIN, Pavel Nikolayevich, Head, Department of Microbiology, Institute of Advanced Training of Physicians, Leningrad - "Coccidiodomycosis-like disease in Russia" (Section E, Symposium XIII)

KRASIL'NIKOV, Nikolay Aleksandrovich, Institute of Microbiology, Academy of Sciences USSR, Moscow - "Antagonistic microbes and their roles in the control of plant diseases" (Section B, Symposium VI)

ZHDANOV, Viktor Mikhaylovich, Institute of Virology imeni D. I. Ivanovsky, Academy of Medical Science USSR, Moscow - (Chairman, Section E, Symposium XII)

Report to be submitted for the Eighth International Congress for Microbiology (IAMS) Montreal, Canada, 19-25 August 62

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, S.M.

"Specificite (Gamme des Hotes Contaminables) des virus d'insects."

Report submitted to the 2nd Intl. Colloq. on Insect Pathology and Microbiological Control, Paris, France 16-24 Oct 1962

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, S. M.,

"Participation of RNA in the Transfer of Genetic Information of a Virus of the DNA-type."

report submitted for the 11th Intl. Congress of Genetics, The Hague, Netherlands, 2-10 Sep 63

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, S. M.

"Influence of environmental factors and genotype on the image of nuclear polyhedra."

report submitted for 13th Intl Cong of Entomology, London, [illegible] Jul [illegible].

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, S.M., doktor biolog. nauk

Molecular bases of the reproduction and mutability of viruses.
Vest. AN SSSR 34 no.11:71-77 N '64. (MIRA 17:12)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERCHENKO, [illegible]

Viral transmission of hereditary characters in the silkworm Bombyx mori. Vop. virus. 10 no.2:112-117 Mr-Ap '65. (MIRA 18:10)

1. Institut mikrobiologii i virusologii imeni D.K.Zabolotnogo AN [illegible] SSSR.

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, S.M.

Mutability in the wasp Mormoniella vitripennis Wlk. Genetika no.2:95-101 Ag '65. (MIRA 18:10)

1. Institute of Microbiology and Virusology, Academy of Sciences of the Ukrainian S.S.R., Kiyev.

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHKOVICH, V.F.

Case of a loop of an adenocarcinomous small intestine strangulated in a hernial sac. Sov. zdrav. Kir. no.1:57 Ja-F '62. (MIRA 15:4)

1. Iz Ivanovskoy uchastkovoy bol'nitsy Kirgizskoy SSR (glavnyy vrach - I.V.Lyubimova)

(HERNIA)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, V.F.

Treatment of acute appendicitis under conditions of a district hospital. Sov. zdrav. Kir. no.4/5:120-121 Jl-O'63 (MIRA 17:1)

1. Iz Ivanovskoy uchastkovoy bol'nitsy (glavnyy vrach - I.V. Lyubimova).

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, V. S.

Gershenzon, V. S. - "The work of the Medical Sanitation personnel in the neuropsychiatric departments of industrial enterprises," Trudy Tsentr. in-ta psikhiatrii, Vol. IV, 1949, p. 468-72

SO: U-4934, 29 Oct 53,(Letopis 'Zhurnal 'nykh Statey, No. 16, 1949).

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GERSHENZON, Ye. M.

"Investigation of Phenomena Accompanying the Propagation of Ultrasound and Methods to be used in Work in this Field: The Trasnsmission of Centimeter-Range Electromagnetic Waves through an Ultrasound Grating."

report presented at the 6th Sci. Conference on the Application of Ultrasound in the investigation of Matter, 3-7 Feb 1958, organized by Min. of Education RSFSR and Moscow Oblast Pedagogic Inst. im N. K. Krupskaya.

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GERSHENZON, Ye. M. Cand Phys-Math Sci -- (diss) "Diffusion of electromagnetic centimeter waves along a periodic supersonic structure." Mos, 1958. 6 pp (Mos State Ped Inst im V. I. Lenin), 150 copies (KL, 52-38, 98)

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, Ye. M.

24(1) PHASE I BOOK EXPLOITATION SOV/3150

Vsesoyuznaya konferentsiya professorov i prepodavateley pedagogicheskikh institutov

Primeneniye ul'trakustiki k issledovaniyu veshchestva; trudy konferentsii, Vyp. 7 (Application of Ultrasonics for Analysis of Substances; Transactions of the All-Russian Conference of Professors and Teachers of Pedagogical Institutes, Nr 7) Moscow, Izd. MOPI, 1958. 283 p. 1,500 copies printed.

Tech. Ed.: S. P. Zhitov; Eds.: V. F. Nozdrev, Professor, and B. B. Kudryavtsev.

PURPOSE: This book is intended for physicists, technicians, aeronautical engineers and other persons concerned with ultrasonics.

COVERAGE: The book contains twenty eight articles which treat ultrasonic phenomena in five general categories: 1) historical data on the development of ultrasonics in the Soviet Union over the past forty years; 2) the speed of sound in suspensions of varying concentration and number and type of components and the relationship between sound velocity and the compressibility of electrolytes; 3) ultrasonic investigations of physical and chemical properties of materials and the determination of physical and chemical constants, e. g. density of aqueous solutions, adiabatic compressibility, molarity of solutions (with given temperatures), viscosity, surface tension, saturation pressure and also ultrasonic investigation of the carbon content and petrographic state of coal; 4) industrial applications of ultrasonics, e. g. emulsification of reagents, cleansing of textile fibers and enhancing the susceptibility of some synthetic fibers to dyeing, etc.; and 5) apparatus which produce ultrasonic waves. No personalities are mentioned. References accompany each article.

Mikhaylov, I. G. and Yu. P. Syrnikov. The Problem of the Compressibility of Solutions of Electrolytes 65

Zarionov, N. I., N. A. Dmitriyeva and G. V. Goryachko. Investigation of the Physical and Chemical Properties of Aqueous Solutions of Dimethyl Formamide in the Temperature Interval From 20 to 60°C With the Ultrasonic and Other Methods 75

Otpushchennikov, N. F. Investigation of the Speed of Ultrasound in Naphthalene and Hyposulfite in the Range of Phase Reversals of the First Order 91

Ondachiy, A. P. The Dependency of the Absorption of Ultrasound Upon Its Intensity 101

Gershenzon, Ye. M. The Use of Ultrasound to Create Periodic Structures 105

Bryukhatov, N. L., and G. F. Dyakov. Some New Magnetostrictive Materials 111

Smolikhina, A. V. Ultrasonic Method of Determining the Saturation Pressure of Plastic Liquids 121

Orlenin, A. F. Ultrasonic Method of Investigating the Crystallization Process of Paraffinic Petroleum Products 127

Matveyev, A. K., and Ye. G. Martynov. Speed of Propagation of Transverse Ultrasonic Waves in Coal 135

Kirillov, O. D. Emulsification of Flotation Reagents by Ultrasonic Waves 143

Greshnev, A. I. Investigation of the Effect of Sound and Ultrasound on the Physical and Hygienic Properties of Fibers During Purification Process 149

Goryachko, G. V., N. A. Dmitriyeva and N. I. Larionov. Application of Ultrasound During Dyeing of Polyacrylonitrile Fiber of the "Nitron" Type 161

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, Ye.M.

Creating periodic structures by means of ultrasound. Uch.zap. MGPI 138:185-195 '58. (MIRA 13:5)

(Ultrasonic waves) (Radio frequency modulation)

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S/141/59/002/05/025/026
E192/E382

AUTHORS: Gershenzon, Ye.M. and Etkin, V.S.

TITLE: Parametric Regeneration at Microwaves in a Semiconductor Diode

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 5, pp 835 - 836 (USSR)

ABSTRACT: The authors have observed the parametric regeneration in various samples of mass-produced detector diodes, type DGS-3, and also in microwave junction-type diodes prepared by the IRE AN SSSR (Institute of Radio-electronics of the Ac.Sc., USSR). The experimental equipment (shown in Figure 1) consisted of:

1 - a klystron generator operating at a wavelength of 7 cm;
2 - attenuators;
3 - a resonant circuit with a variable capacitance;
4 - a klystron generator producing the pump frequency (wavelength of 3.5 cm);
5 - an impedance transformer;
6 - a filter suppressing the pump frequency signal;
7 - an oscillograph.

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Parametric Regeneration at Microwaves in a Semiconductor Diode

A resonant circuit was in the form of a waveguide section fitted with two plungers and two perpendicular waveguides feeding the pump power. The investigated diode D was situated in the centre of the waveguide "cross" and operated under the self-bias conditions. With the diode DGS-3 it was possible to obtain amplification of the order of 2 to 3 db. The diodes of the IRE AN SSSR gave a gain of 12-15 db over the bandwidth of 2 Mc/s. The authors make acknowledgment to the IRE AN SSSR for supplying the samples of the diodes and to N.N. Malov and N.V. Aleksandrov for advice during the experiments. There are 2 figures and 4 references, 2 of which are English and 2 Soviet.

ASSOCIATION: Moskovskiy pedagogicheskiy institut im. B.I. Lenina (Moscow Pedagogical Institute imeni V.I. Lenin)

SUBMITTED: First - April 4, 1959
After revision - June 8, 1959

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E310/E382

AUTHORS: Aleksandrov, N.V., Gorskaya, L.B., Gershenzon, Ye.M. and Etkin, V.S.

TITLE: Control of the Amplitude and Phase of an Electromagnetic Wave in a Waveguide by Means of Germanium Plate

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 6, pp 911 - 914 (USSR)

ABSTRACT: Experiments were conducted on phase and amplitude modulation of an electromagnetic wave incident on a germanium plate inside a waveguide by controlling the concentration of free-charge carriers in the germanium. The concentration of free-charge carriers changes the permittivity of the semiconductor, thus influencing the absorption of electromagnetic waves in the semiconductor. The control of concentration was achieved by using the Hall effect in a germanium plate having different velocities of recombination on its opposite surfaces. High-resistance (35 - 40 Ω.cm) antimony-alloyed n-type germanium was used. Concentration of free-charge carriers N was approximately 10^{14} per cm^3; permittivity was

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Control of the Amplitude and Phase of an Electromagnetic Wave in a Waveguide by Means of Germanium Plate

approximately 16. By varying the electrical current flowing through the germanium plate, both the modulus and the phase of the reflection coefficient, as well as the phase of the passing wave, can be varied. In this way, a phase modulation can be achieved, the percentage of which for a given material depends upon the phase difference caused by reversal in current at a given current value. An audio-frequency generator and a pulse generator were used as signal sources. Modulation percentage was independent of the period of modulation voltage up to 0.1 μs pulses. Efficiency of the modulator can be increased considerably by more careful treatment of the plate surfaces to increase the difference in the recombination rate on the surfaces. There are 4 figures and 11 references, 6 of which are English, 1 German and 4 Soviet.

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Control of the Amplitude and Phase of an Electromagnetic Wave in a Waveguide by Means of Germanium Plate

ASSOCIATION: Moskovskiy pedagogicheskiy institut im. V.I. Lenina (Moscow Pedagogical Institute imeni V.I. Lenin)

SUBMITTED: June 8, 1959

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GERSHENZON, YE.M.

[illegible]

Primenenye [illegible] vyp. 10. (Utilization of [illegible] for Investigation of Materials. no. 10) Moscow, Izd-vo MOPI, 1960. 321 p. 1000 copies printed.

Eds.: V. F. Nozdrev, Professor, and B. B. Kudryavtsev, Professor.

PURPOSE: This book is intended for physicists and engineers interested in ultrasonic engineering.

COVERAGE: The collection of articles reviews present-day research in the application of ultrasound in medicine, chemistry, physics, metallurgy, ceramics, petroleum and mining engineering, defectoscopy, and other fields. No personalities are mentioned. References accompany individual articles.

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Belinskaya, L. B., and B. A. Belinskiy [Moscow Oblast Polytechnical Institute imeni Krupskaya]. Energy Losses in the Electrical and Acoustical Lines of a Pulsed Ultrasonic Device 255

Gershenzon, Ye. M. [MGPI im. V. I. Lenina - Moscow State Pedagogical Institute]. The Passage of Electromagnetic Centimeter-Length Waves Through a Longitudinal Ultrasonic Screen 265

Zakurenov, V. M. [Shuyskiy pedinstitut - Shuya Pedagogical Institute]. The Problem of Ultrasonic-Wave Absorption in Complex Esters of Formic Acid 269

Zalivskiy, V. N. [Moscow Oblast Polytechnical Institute imeni N. K. Krupskaya]. The pulse Method of Studying

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32921

9,2572 (1139)

S/194/61/000/011/056/070
D271/D302

AUTHORS: Bogatkova, O.M., Gershenzon, Ye.M., Dombrovskaya, T.S., Ptitsyna, N.G., Rozhkova, G.I., Sperantov, V.V. and Etkin, V.S.

TITLE: Single-circuit regenerative and super-regenerative parametric amplifiers with semiconductor diodes

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 11, 1961, 12, abstract 11 K91 (V sb. Poluprovodnik. pribory i ikh primeneniye, no. 6, M., Sov. radio, 1960, 41-62)

TEXT: Theoretical and experimental results are given of a study of single-circuit regenerative and super-regenerative parametric amplifiers with semiconductor diodes. The amplifier forward and reflex operation in a synchronous and biharmonic mode is considered. Results of the investigation into noise parameters of the diode are given. Experiments confirmed the analytical results. It

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Single-circuit...

is shown that super-regenerative operation leads to considerable distortions of the received signal spectrum, but on the other hand it makes it possible to widen the amplifier bandwidth and to achieve greater stabilization of gain. 8 references. [Abstracter's note: Complete translation]

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32923

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D271/D302

9,2570(1139,1144,1159)

AUTHORS: Gershenzon, Ye.M., Gurvich, Yu.A., Litvak-Gorskaya, L.B. and Etkin, V.S.

TITLE: Some problems of development of microwave amplifiers based on negative mass of current carriers in semiconductors

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 11, 1961, 13, abstract 11 K98 (V sb. Poluprovodnik. pribory i ikh primeneniye, no. 6, M., Sov. radio, 1960, 92-102)

TEXT: The calculation is given of the microwave reflex amplifier making use of the negative effective mass of current carriers in semiconductors. It is shown that the product of the square root of gain K and transmitted bandwidth Δf increases with the concentration of negative mass carriers. The problem of the intrinsic noise of the amplifier is considered and effective temperature of

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Some problems of development...

amplifier noise is evaluated. The upper limit of the effective noise temperature is 100°K for frequencies at which instability of the space charge does not occur. The comparison of the average periods of optical and acoustical scatters leads to the conclusion that acoustic scatter can be avoided by the use of a sufficiently strong electric field. It is suggested that a possibility exists of realizing an amplifier based on negative mass carriers in germanium, operating on d.c. because the amplification effect at the expense of negative mass must take place in this as well. Measurement of the voltage-current characteristic of a specimen may permit one to judge whether negative effective mass carriers are present. 8 references. [Abstracter's note: Complete translation]

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26252

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D216/D304

24.1800 2607,1137

AUTHOR: Gershenzon, Ye. M.

TITLE: Transmission of centrimetric electromagnetic waves through a longitudinal ultrasonic lattice

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 1, 1961, 14, abstract 1 E126 (V Sb. Primeneniye ul'traakust. k issled. veshchestva, no. 10, M., 1960, 265-267)

TEXT: The change in the phase velocity of a centimetric electromagnetic wave propagated in a wave-guide filled with liquid has been observed, in which an ultrasonic standing wave has been created. Experimental results are given which show that the phase velocity change depends on the frequency of ultrasonic wave (20; 30 kc/s and 0.25 - 1.5 mc/s). 3 references.

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E192/E382

AUTHORS: Gershenzon, Ye.M., Lyubimova, T.F., Ptitsyna, N.G., Rozhkova, G.I. and Etkin, V.S.

TITLE: Investigation of the Super-regenerative Regime in Single-tuned Parametric Amplifiers

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1961, Vol. 4, No. 1, pp. 113 - 120

TEXT: The super-regenerative regime in parametric amplifiers can be achieved by additionally introducing low-frequency modulation of the variable capacity in the system (Ref. 1 - Heffner, H., Wade, G. and Junger, M. - Proc. IRE, 47, 1971, 1959; Ref. 2 - B. Bossard - Proc. IRE, 47, 1970, 1959). If this regime in the amplifier is achieved by a comparatively slow modulation of the pump signal, the oscillations in a series LCR circuit of the system can be described by:

$$L\frac{d^2q}{dt^2}+R\frac{dq}{dt}+\frac{q}{C_0}\{1+m[1+h\cos(\omega_m t)]\sin(\omega_n t)\}=E_0\cos(\omega_e t-\psi), \quad (1)$$

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where ω_c is the signal frequency,

ω_H is the modulation frequency,

m is the mean modulation depth of the nonlinear capacitance, and

h is the depth of the low-frequency pump-source modulation.

Eq. (1) can also be written as:

$$\ddot{y} + 2\Theta\dot{y} + (1 + 2\xi_0)\, y + my\,[1 + h\cos(\Omega\tau)]\,\sin(2\tau) = \lambda\cos[(1+\xi)\tau - \psi], \qquad (2)$$

where:

$$y = q/C_0 u_0;\ \lambda = E_0/u_0;\ 2\Theta = R/\omega_0 L;\ 2\omega_0/\omega_H = 1 + \xi_0;$$
$$2\omega_c/\omega_H = 1 + \xi;\ 2\omega_m/\omega_H = \Omega;\ \tau = \omega_H t/2;\ \omega_0 = 1/\sqrt{LC_0}. \qquad (2a)$$

In the analysis of this equation it is assumed that $\xi_0 = 0$ and that the system can be solved by the Van-der-Pol equation,

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which is in the form:

$$y = a \sin \tau + b \cos \tau$$

where a and b are slowly varying time functions. Consequently, the system of simplified equations for the amplifier (Ref. 3 - the authors - Radio-engineering industry, 17, 3, 1959) can be written as:

$$\begin{aligned} 2\dot{a} &= \lambda \cos(\xi\tau - \varphi) - \left(2\theta + \frac{m}{2}\right) a - \frac{mh}{2} a \cos(\Omega\tau); \\ -2\dot{b} &= -\lambda \sin(\xi\tau - \varphi) + \left(2\theta - \frac{m}{2}\right) b - \frac{mh}{2} b \cos(\Omega\tau), \end{aligned} \quad (3),$$

which differs from those obtained in Ref. 3 by the presence of the last terms which are due to the modulation. It can be assumed that the solution of the simplified equations is in the form:

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$$a = \sum_N \{A_{1N} \sin[(\xi + N\Omega)\tau - \varphi] + A_{2N} \cos[(\xi + N\Omega)\tau - \varphi]\};$$

$$b = \sum_N \{B_{1N} \sin[(\xi + N\Omega)\tau - \varphi] + B_{2N} \cos[(\xi + N\Omega)\tau - \varphi]\} \quad (N \neq 0), \qquad (4)$$

where A_{1N}, A_{2N}, B_{1N} and B_{2N} are constant coefficients. These constants can be determined from an infinite system of algebraic equations which are obtained by substituting Eqs. (4) into Eqs. (3). However, in practice, it is sufficient to consider only a finite N, so that the number of equations is reduced. By analysing the solutions obtained on the basis of Eqs. (4), it is concluded that:

1) the amplification bandwidth in the super-regenerative regime is greater than that in the regenerative regime for the same maximum amplification coefficient, and

2) at $\omega_c = \omega_H/2 \pm N\omega_m$, the amplitude of the oscillations

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of the signal frequency and other frequency components achieves a maximum, the maximum being most pronounced in the component $\omega_c \pm N\omega_m$ which coincides with $\omega_H/2$. The oscillations in the super-regenerative amplifier have a complex spectrum and two types of frequency characteristics are possible:
a) the overall value of the oscillations excited is regarded as the response of the system and thus the corresponding frequency characteristic can be observed if the amplifier is followed by a video detector;
b) the amplitude of the oscillations having a frequency of the input signal, or that of one of the spectral components, is regarded as the response of the system; in this case the characteristic can be determined if the amplifier is followed by a filter or a superheterodyne receiver having a narrow bandwidth. These effects are illustrated by families of frequency characteristics of the two types which are given in Figs. 1 and 2. The characteristics of Fig. 1 were evaluated for $\Theta = 0.021$, $m = 0.08$, $n = 0.047$, $\Omega = 6 \times 10^{-3}$ and $h = 100\%$;

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the parameters for Fig. 2 were $\Theta = 0.021$, $m = 0.08$, $n = 0.047$, $\Omega = 0.25 \times 10$ and $h = 0.75\%$. From these figures it is seen that the magnitude of the secondary maxima in the super-regenerator-filter system decays faster than in the super-regenerator-video detector system. The super-regenerative amplifier was investigated experimentally at comparatively low frequencies (1.3 Mc/s) and at UHF. The amplifier for 1.3 Mc/s was studied by employing a sweep-frequency generator and a superheterodyne receiver. Investigation of the UHF amplifiers was performed by means of a spectrum analyser. The measured results are in qualitative agreement with the calculated data. In particular, the measured characteristics show that in the case when the modulation frequency ω_m is greater than the bandwidth of the amplifier, the frequency response of the system has a large number of narrowly-spaced peaks (comb-like response). The authors express their gratitude to Yu.Ye. D'yakov for discussing the problems of this work.

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Investigation of the S/141/61/004/001/010/022
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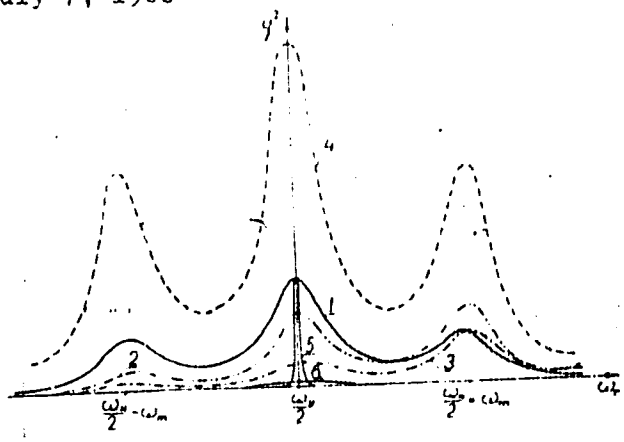
There are 7 figures and 6 references: 4 Soviet and 2 non-Soviet (quoted in text).

ASSOCIATION: Moskovskiy pedagogicheskiy institut im.V.I.Lenina (Moscow Pedagogical Institute im. V.I. Lenin)

SUBMITTED: July 7, 1960

Fig. 1:



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9,2572 25951 S/141/61/004/001/011/022
E033/E435

AUTHORS: Gershenzon, Ye.M., D'yakov, Yu.Ye., Soina, N.V., Smirnova, L.A. and Etkin, V.S.

TITLE: Widening the passband of parametric amplifiers with the help of coupled circuits

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1961, Vol.4, No.1, pp.121-125

TEXT: The relatively narrow frequency passband of tuned parametric amplifiers is not a fundamental deficiency and can be overcome by the use of coupled tuned circuits. This article investigates the possibility of widening the passband by two coupled circuits. The amplifier is represented as two identical coupled circuits tuned to the same frequency ω_0, but the capacity of one circuit is varied at a frequency $\omega_H = 2\omega_0$. The differential equations for such a driven oscillatory circuit may be written as

$$\frac{d^2q_1}{dt^2} + 2h\frac{dq_1}{dt} + q_1\omega_0^2\,[1 + m\cos\omega_H t] + \eta_1\frac{d^2q_2}{dt^2} = e^{j\omega t} + e^{-j\omega t};$$

$$\frac{d^2q_2}{dt^2} + 2h\frac{dq_2}{dt} + q_2\omega_0^2 + \eta_1\frac{d^2q_1}{dt^2} = 0, \qquad (2)$$

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Widening the passband ... S/141/61/004/001/011/022
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where $\eta = M/L$ - the coupling coefficient; $2h = R/L$; $\omega_0^2 = 1/LC_0$; L, R being the self-inductance and resistance of each circuit, M the mutual inductance, C_0 the constant capacity of the tuned circuit. The variable capacity C_1 is related to C_0 by $C_1^{-1} = C_0^{-1}(1 + m \cos \omega_H t)$. The solution depends on the degree of coupling. It is shown that: 1) if the coupling is less than, or equal to, critical ($\varkappa = \eta Q \leqslant 1$) then the amplifier is excited only at the frequency $\omega_H/2$ and the critical modulation depth increases $(1 + \varkappa^2)$ times in comparison with a single tuned circuit; 2) if the coupling is greater than critical ($\varkappa = \eta Q > 1$) then the amplifier is excited at three frequencies: $\omega_1 = \omega_H/2$, ω_2 and ω_3, which correspond to detuning $\alpha_1 = \pm \sqrt{\varkappa^2 - 1}/Q$ (ω_2 and ω_3 are approximately the same as for the frequencies of the normal oscillatory system). As far as the passband widening is concerned only the first case, when $\varkappa \leqslant 1$, is of interest (since with coupling greater than critical, the frequency response curve is double humped with a deep drop in the middle). The gain k and the passband $\Delta f/f$ are found next.

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$$k = \frac{Q^2}{Q_{ext}^2 n^2} \frac{1}{(1 + \varkappa^2)^2} \tag{8}$$

where $Q_{ext} = 1/Z\omega_0 C_0$; $n = 1 - m^2/m_{cr}^2$

Z is the wave impedance of the supply line to the amplifier; m_{cr} is the critical modulation. For $n \ll 1$, the passband equals

$$\frac{\Delta f}{f} \approx \frac{n}{Q} \frac{1 + \varkappa^2}{1 - \varkappa^2} \tag{9}$$

and hence

$$\frac{\Delta f}{f} \sqrt{k} = \frac{1}{Q_{ext}} \frac{1}{1 - \varkappa^2} \tag{10}$$

If $\varkappa < 1$, reduction in the gain is accompanied by increase in the passband and the product $(\Delta f/f)\sqrt{k}$ can be significantly greater than for a single circuit. The phase change introduced into the

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signal is given by

$$\operatorname{tg}\varphi \approx -\frac{\alpha_1 Q}{n}\,\frac{1-\varkappa^2}{1+\varkappa^2} \qquad (12)$$

where $\alpha_1 = 1 - (\omega^2/\omega_0^2)$. The frequency response curves are illustrated. The theoretical results were confirmed on an experimental model at 4.5 Mc/s frequency. For the single-circuit amplifier, the passband was 50 kc/s and the gain 20 dB; for the coupled circuit case, the passband was 150 Mc/s. Thus $(\Delta f/f)\sqrt{k}$ was increased from 1/9 to 1/3. The use of coupled circuits leads to a similar widening at uhf, e.g. for a single circuit amplifier with $k = 20$ dB, bandwidth = 15 Mc/s; for a double circuit amplifier with $k = 20$ dB, the bandwidth is 45 to 50 Mc/s. There are 3 figures and 8 references: 5 Soviet-bloc and 3 non-Soviet-bloc. The three references to English language publications read as follows: H.Heffner, G.Wade, J.Appl.Phys., 29, 1262 (1958); H.Heffner, K.Kotzebue, Proc.IRE, 46, 1301 (1958); G.F.Herrmann, M.Uenohara, A.Uhlir, Proc.IRE, 46, 1301 (1958).

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25951

Widening the passband ... S/141/61/004/001/011/022
E033/E435

ASSOCIATION: Moskovskiy pedagogicheskiy institut im. V.I.Lenina
(Moscow Pedagogical Institute imeni V.I.Lenin)

SUBMITTED: July 7, 1960

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

9,2572

S/109/61/006/005/019/027
D201/D303

AUTHORS: Gershenzon, Ye.M., Ptitsyna, N.G., Rozhkova, G.I., and Etkin, V.S.

TITLE: A single circuit parametric amplifier

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 5, 1961, 829 - 834

TEXT: The authors give certain results of studying a single circuit parametric amplifier using a simi-conductor diode. They based their study on works published in the thirties, of the school of L.I. Mandel'shtam and of N.D. Papaleksi (Ref. 5: K. voprosu o parametricheskoy regeneratsii (On the Question of Parametric Regeneration) IEST, 1935, 3, 1) (Ref. 6: E.M. Rubchinskiy, IEST, 1953, 3, 7) (Ref. 7: M. Divil'kovskiy, S. Rytov, ZhTF, 1936, 6, 3, 474) (Ref. 8: V.A. Lazarev, Kolebaniya v svyazannykh sistemakh s periodicheski menyayushchimisya parametrami (Oscillations in Linked Systems With Periodically Changing Parameters) ZhTF, 1940, 10, 11, 918).

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A single circuit ...

The theory of a single circuit parametric amplifier is based in its essentials on Ref. 10 (Ref. 10: Spravochnik po volnovodam (Waveguide Handbook) perev. s angl. pod red. v. i. Sushkevicha, Izd. Sovietskoye radio, 1952)[Abstractor's note: No further details given]. The circuit oscillations equation is given as

$$L\frac{d^2q}{dt^2}+R\frac{dq}{dt}+\frac{1}{C_0}[1+m\sin(\omega_{\text{н}}t-\varphi_{\text{н}})]q=E_0\sin(\omega_{\text{б}}t-\varphi_{\text{б}}), \qquad (3)$$

where L - the equivalent inductance of the cct; $R = Z + R_s$; R_s - the loss resistance of the diode. [Abstractor's note: The symbols are those used in Ref. 7 (Op.cit.)]. Applying the method of Ref: 7 (op.cit.) and notation of

$$y=\frac{q}{C_0U_0};\quad \lambda=\frac{E_0}{U_0};\quad 2\theta=\frac{R}{\omega_0L};\quad \omega_0^2=\frac{1}{LC_0};\quad \omega_{\text{н}}=2\omega_1;$$

$$t=t_1+\frac{\varphi_{\text{н}}}{\omega_{\text{н}}};\quad \frac{\omega_0}{\omega_1}=1+\xi_0;\quad \frac{\omega_0}{\omega_1}=1+\xi;\quad \tau=\omega_1t\quad \Psi=\varphi_0-\frac{\omega_{\text{б}}}{\omega_{\text{н}}}\varphi_{\text{н}}$$

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the equation for the amplitude of the fundamental of oscillations is derived as

$$A^2 = \frac{\lambda^2}{4C^2}\left[\left(\xi_0^2+\left(\theta+\frac{m}{4}\right)^2\right)\sin^2\Psi + \left(\xi_0^2+\left(\theta-\frac{m}{4}\right)^2\right)\cos^2\Psi - \xi_0\frac{m}{4}\sin 2\Psi\right] \qquad (8)$$

where Ψ is the signal frequency and ω_p the pumping frequency. The amplitudes of harmonics are given in

$$A^2_{1+\xi} = \lambda^2\frac{\theta^2+(\xi_0+\xi)^2}{4(4\xi^2\theta^2+C^2)}, \quad A^2_{1-\xi} = \lambda^2\frac{\left(\frac{m}{4}\right)^2}{4(4\xi^2\theta^2+C^2)}. \qquad (9)$$

and the resonance curves for synchronism and 2nd harmonic regime are given for three values of ξ, from which it may be seen that the maximum of amplification occurs near $\omega_s = 3/2\ \omega_p$. The minimum noise figure which can be obtained is given by

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$$F_{min} = 1 + \frac{1}{\frac{f_{cr}}{f} - 1} \frac{T_s}{T_o},$$

in which f_{cr} is the frequency at which the modulation of the self-capacity of the diode can compensate only for losses introduced by the diode itself. The experimental studies of single circuit amplifiers were carried out using arrangements described by the authors (Ref. 15: Osnovy teorii, rascheta i voprosy metodiki eksperimental'nogo issledovaniya odnokonturnykh parametricheskikh usiliteley SVCh na poluprovodnikovykh diodakh, Radioelektronnaya prom - st', 1959, 17, 3) at frequencies 3,000 and 4,500 mc/s. It was observed that there are two harmonics present at the output.

Table.

$f_{раз}$ (1) Мгц mc/s	Q	$Q_{внеш}$ (2) ext	K, об (3) db	$\Delta f_{усил.}$ (4) ampl. Мгц mc/s	$\Delta f_{перестр.}$ (5) tuning Мгц mc/s	$\sqrt{K_1}\frac{\Delta f_{внеш}}{f}$ (6)
4500	25—30	30—35	27 (500 раз)	7		$155/4500 \simeq \frac{1}{30}$
	25—30	30—35	20 (100 раз)	15	40°	$150/4500 \simeq \frac{1}{30}$

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A single circuit ...

Table (cont'd). Legend: 1 - $f_{working}$ mc/s; 2 - Q_{ext}; 3 - K, db; 4 - f_{ampl} mc/s; 5 - f_{tuning} mc/s; 6 - $\sqrt{K_1}\ \frac{\Delta f_{exp}}{f}$.

The table gives the magnitudes of the Q-factor of one of the amplifier models, together with the measured values of other parameters at a frequency of 4,500 mc/s, using diodes as described by M. Gershenzon and V.S. Etkin (Ref. 12: O parametricheskoy regeneratsii v diapazone SVCh na poluprovodnikovom diode, Izv. vuzov MVO SSSR (Radiofizika) 1959, 2, 5, 855). Similar results have been obtained at 3,000 mc/s. The authors acknowledge the help of K.A. Merkur'yev, N.Ye. Skvortsova, A.V. Krasilov, V.M. Val'd - Perlov and A.A. Rabinovich-Vizel'. There are 3 figures, 1 table and 17 references: 13 Soviet-bloc and 4 non-Soviet-bloc. The references to the English-language publications read as follows: H. Heffner, G. Kotzebue, Proc. I.R.E., 1958, 46, 6, 1301; G. Herrman, H. Venohara, A. Uhlir, Proc. I.R.E., 1958, 46, 6, 1301; S. Blooms, K.K. Chang, R.C.A. Rev., 1957, 18, 4, 578; A. Uhlir, Proc. I.R.E., 1956,

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D201/D303

A single circuit ...

44, 4, 557.

ASSOCIATION: Moskovskiy gosudarstvennyy pedagogicheskiy in-t im. V.I. Lenina Kafedra eksperimental'noy fiziki (Moscow State Pedagogical Institute im. V.I. Lenin, Department of Experimental Physics)

SUBMITTED: July 2, 1959 (initially)
March 3, 1960 (after revision)

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

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D201/D303

9,2572

AUTHORS: Gershenzon, Ye.M., and Etkin, V.S.

TITLE: Spectral and amplitude frequency characteristics of super regenerative parametric amplifiers

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 5, 1961, 837 - 838

TEXT: Parametric regenerative amplifiers may be considered as regenerative amplifiers with a negative resistance at each of the frequencies which are amplified, i.e. at f_s and $f_{diff} = f_p - f_s$, where f_s and f_{diff} and f_p are the signal frequency, the difference frequency, and pump frequency respectively. According to Ye.M. Gershenzon, N.G. Ptitsyna, G.N. Rozhkova and V.S. Etkin (Ref. 3: Ob odnokonturnom parametricheskom usilitele, Radiotekhnika i elektronika, 1961, 6, 5, 829). The expression for gain of every harmo-

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nic with large amount of regeneration is given by

$$k = \frac{Z^2}{(R - R\ )^2}, \qquad (1)$$

[Abstractor's note: This expression is not explicably given in the reference mentioned], where Z - the characteristic resistance of the line feeding the amplifier, R - the total resistance of the equivalent circuit of the amplifier, R - the negative resistance given by

$$R = \frac{m}{2}\frac{1}{\omega_0\ c_0}, \qquad (2)$$

where ω_0 - the circuit frequency, C_0 - capacitance at working point [Abstractor's note: The capacitance C_0 in Eq. (2) is printed in a small character]. If the pump voltage, which governs the capacitance of the diode, is modulated by low frequency $\Omega = 2\pi F$

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Spectral and amplitude ...

which amounts to the same as if C_0 were modulated, then one could say that the negative resistance is being modulated. This is why the behavior of a super regenerative amplifier could qualitatively be described using the theory of a normal super regenerative amplifier having a modulated negative resistance as proposed by G.S. Gorelik (Ref. 4: Lineynyye rezonansnyye yavleniya v superregenerativnom priyemnike, Elektrosvyaz' 1939, 6). On account of the above, the spectrum at the output of the amplifier should have two families of spectra, $f_s \pm nF$ and $f_{diff} \pm nF$, $n = 0, 1, 2, \ldots$, with two maxima at frequencies $f_p/2 \pm nF$ appearing on the frequency characteristics. In the present article, the above deductions have been confirmed for amplifiers described in (Ref. 3: Op.cit.). At super regeneration a "high" frequency of pump modulation was used (2 - 5 mc/s), comparable in magnitude to the pass-band of the amplifier. It was shown that, indeed, at super regeneration there exist at the output of the amplifier two families of spectra and at the same time the frequency characteristics, while expanding,

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assume additional maxima. The ordinate of the frequency characteristic represents in this case the total amplitude of oscillations at all frequencies, excited in the parametric super regenerative amplifier by the signal frequency ω. This amplitude was measured by the current of the video detector at the output of the amplifier. The oscillograms obtained with a wave analyzer for the regenerative and the super regenerative states are shown in this article as well as the oscillograms of the frequency characteristics of the amplifier obtained with a sweep generator at regeneration and super regeneration. The super regeneration increases the gain (e.g. for the same average pumping level from 20 to 35 - 40 db) and the passband (2 to 4 times). This is achieved however by considerably distorting the signal which precludes the use of the super regenerative amplifiers in many applications. There are 10 figures and 4 references: 2 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: H. Heffner, G. Wade, Proc. I.R.E., 1159, 47, 7, 1971; B. Bossard, Proc. I.R.E., 1959, 47, 7, 1969 [Abstractor's note: This is essentially a complete translation].

SUBMITTED: March 9, 1960

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A055/A127

9.2570 (1144,1159,1139)

AUTHORS: Aleksandrov, N. V., Gershenzon, E. M. and Etkin, V. S.

TITLE: Regenerative low-noise microwave amplifiers.

PERIODICAL: Elektrosvyaz', 15, no. 6, 1961, 31 - 37

TEXT: The authors derive generalized formulae giving the amplification factor, passband and the noise factor of resonator-type regenerative microwave amplifiers. The elements of the total resistance type are called by the authors regenerative elements with negative effective resistance (Ref. El. - R_-), while the elements of the total-conductance type are called regenerative elements with negative effective conductance (Reg. El. - G_-). Figure 2a is the equivalent circuit of an active Reg. El. - R_-. R_c is the loss resistance of the element; X_c its reactance; R_- the negative resistance created by the element in the circuit. Figure 2b is the equivalent circuit of the resonator-type regenerative passage-coupled amplifier, and Figure 2 c the equivalent circuit of the reflection-coupled amplifier: $X = X_{circ} + X_c$, R_c is the loss resistance in the amplifier circuit and Z_c is the wave impedance of the feeding line. Figure 3a is the equivalent circuit of Reg.El. - G_-. G_c is the loss conductance of the element; B_c its reac-

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tive conductance, G_- the negative conductance created by the element in the circuit. Figure 3b is the equivalent circuit of the passage-coupled amplifier and Figure 3c of the reflection-coupled amplifier. Basic formulae for the amplification factor and the noise factor. The amplification factor of an passage-coupled amplifier is determined as the ratio of the power at the amplifier output to the power given up by the signal source to a matched load. This latter power is

$$P_{cc} = \frac{E^2}{4R_d} \qquad (3)$$

E being the RMS of the emf. On the other hand:

$$P_{c\ outp} = \frac{E^2 R_\mu}{(R_d - R_-)^2} \qquad (4)$$

and therefore

$$K = \frac{P_{c\ outp}}{P_{cc}} = \frac{4 R_d R_\mu}{(R_d - R_-)^2} \qquad (5)$$

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where $R = R_c + R_k + R_d + R_H$. In the case of reflection-coupled amplifiers, the amplification factor is the ratio of the reflected wave power to the incident power, (i.e., the reflection factor):

$$K = \frac{P_{reflect.}}{P_{inc}} \tag{6}$$

Since $P_{inc} = \frac{U^2_{inc}}{Z_0}$, $P_{reflect} = \frac{U^2_{reflect}}{Z_0}$, and $U_{reflect} = U_{inc} - Z_0 I_H$,

$$K = \frac{U^2_{reflect}}{U^2_{inc}} = \left| 1 - \frac{Z_0 I_H}{U_{inc}} \right|^2 \tag{7}$$

Taking into account the equivalent circuits (Figure 2 and 3), the authors obtain:

$$K = \left| 1 - \frac{2Z_0 I_H}{E} \right|^2, \quad \text{i.e., for } K \gg 1 \qquad K = \frac{4 Z_0^2 I_H^2}{E^2} \tag{8}$$

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or

$$K = \frac{4 Z_0^2}{(R - R_-)^2} \qquad (9)$$

where $R = Z_0 + R_K + R_c$, $I_H = \frac{E}{R - R_-}$. The pass-band of the amplifier is determined by the Q-factor of the system

$$\frac{\Delta f}{f} = \frac{1}{Q_p} = \omega C(R - R_-) \qquad (10)$$

In the case of passage-coupled amplifiers:

$$\sqrt{K}\,\frac{\Delta f}{f} = 2\sqrt{R_d R_H}\,\omega_0 C = 2\sqrt{R_d R_H}\,\frac{C}{2\pi\sqrt{LC}} = \frac{\sqrt{R_d R_\mu}}{\pi}\sqrt{\frac{C}{L}} = \frac{\sqrt{R_d R_\mu}}{\pi\rho} \qquad (11)$$

where $\rho = \sqrt{\frac{L}{C}}$ is the characteristic impedance of the circuit.

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If $R_K \ll R_H$; $R_d \approx R_H \approx 1/2\ R_-$, then $\sqrt{K}\,\frac{\Delta f}{f} = R_-\omega_c\ C$. (12)

In the case of reflection-coupled amplifiers

$$\sqrt{K}\,\frac{\Delta f}{f} = 2\ Z_0\,\omega_0\ C \tag{13}$$

or (since usually $Z_0 \gg R_k$ and hence $R_- \approx Z_0$):

$$\sqrt{K}\,\frac{\Delta f}{f} = 2\ R_-\omega_0\ C. \tag{14}$$

The noise factor is expressed by:

$$F = \frac{P_{n\ outp}}{K\ P_{n\ inp}} \tag{15}$$

$P_{n\ outp}$ being the noise power at the amplifier output, and $P_{n\ inp}$ the noise power at the amplifier input, i.e., the power given up by the noise source with internal resistance R_d and temperature T_0 ($T_0 \approx 290^oK$) to the matched load. The noise emf operating in the circuit are:

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1) the noise emf of the signal source: $E^2_{nd} = 4\ KT_0\ R_d\ \Delta f$ (16),

2) the thermal noise emf produced in R_k $E^2_{nk} = 4\ KT_k\ R_k\ \Delta f$, (17)

3) the thermal noise emf produced in R_c $E_{nc} = 4\ KT_c\ R_c\ \Delta f$, (18)

4) the thermal noise emf produced in R_H $E_{nH} = 4\ KT_H\ R_H\ \Delta f$, (19)

Besides, sources of non-thermal noises may exist in the amplifier, which can be represented as sources of additional noises with resistance R_c and temperature T_{cg}.

$$E^2_{ng} = 4\ KT_{cg}\ R_c\ \Delta f \qquad (20)$$

Considering the noises as non-correlated, the authors obtain, in the case of passage-coupled amplifiers

$$P_{n\ outp} = 4\ K\Delta f\left[\frac{T_0R_dR_u}{(R - R_-)^2} + \frac{T_KR_KR_u}{(R - R_-)^2} + \frac{T_cR_cR_u}{(R - R_-)^2} + \frac{T_HR_HR_u}{(R - R_-)^2} + \frac{T_{cg}R_cR_u}{(R - R_-)^2}\right]$$

and $P_{n\ inp} = KT_0\Delta f$, so that:

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$$F_{passage} = 1 + \frac{R_k T_k}{R_d T_0} + \frac{R_k T_k}{R_d T_0} + \frac{R_c T_{cg}}{R_d T_0} \quad (21)$$

In the case of reflection-coupled amplifiers, they obtain in an analogous manner:

$$F_{reflect} = 1 + \frac{R_k T_k}{R_d T_0} + \frac{R_c T_c}{R_d T_0} + \frac{R_c T_{cd}}{R_d T_0} \quad (22)$$

It ensues from (21) and (22) that the reflection-coupled amplifier is characterized by a smaller noise factor than the passage-coupled amplifier. To obtain the minimum noise factor, there must be a strong mismatch between amplifier and signal generator:

$$R_c \ll R_d; \quad R_k \ll R_d; \quad R_H \ll R_d \quad (23)$$

To obtain a high amplification, it is necessary that:

$$R_- \approx R. \quad (24)$$

The use of a ferrite circulator ensures a smaller noise factor and a greater stability of the whole system. In parametric amplifiers, the noise factor is somewhat greater in both cases. For parallel circuits, the basic formulae are analogous

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to the preceding ones:

$$K_{passage} = \frac{4\, G_d\, G_\mu}{(G - G_-)^2}$$

where $G = G_d + G_k + G_c + G_H$

$$K_{reflect.} = \frac{4Y_0^2}{(G - G_-)^2} \qquad (25)$$

where $G = Y_0 + G_k + G_c$

$$F_{passage} = 1 + \frac{G_k T_k}{G_d T_0} + \frac{G_c T_c}{G_d T_0} + \frac{G_\mu T_\mu}{G_d T_0} + \frac{G_c T_{cg}}{G_c T_0},$$

$$F_{reflect.} = 1 + \frac{G_k T_k}{G_d T_0} + \frac{G_c T_c}{G_d T_0} + \frac{G_0 T_{cg}}{G_d T_0} \qquad (26)$$

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Regenerative low-noise microwave amplifiers

The condition for high amplification is:

$$G_{-} \approx G \qquad (27)$$

The condition for low noise is:

$$\left.\begin{array}{ll} G_{K} \ll G_{d} & T_{eg} \ll T_{0} \\ G_{H} \ll G_{d} & G_{K} \ll Y_{0} \\ G_{c} \ll G_{d} & G_{c} \ll Y_{0} \end{array}\right\} \qquad (28)$$

To ensure low-noise, the regenerative elements of the microwave circuits must satisfy the conditions:

$$R_{-} \gg R_{c}; \quad G_{-} \gg G_{c} \qquad (29)$$

There are 3 figures and 7 references, 5 Soviet-bloc and 2 non-Soviet-bloc. The references to two English-language publications read as follows: Krömer. The

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Regenerative low-noise microwave amplifiers

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physical principles of a Negative mass amplifier. Proc. IRE, 1959, vol. 47, No.3. 2) Sard. Tunnel (Esaki)diode amplifiers with unusually large band-widths. Proc. IRE, 1960, vol. 48, No. 3.

SUBMITTED March 3, 1961

[Abstracter's note: The following subscripts are translated in formulas and text: reflect. is the translation of отр ; passage is the translation of пр , inc. (incident) is the translation of пад ; n (noise) is the translation of ш , outp. is the translation of вых , inp. is the translation of вх ; d replaces з .

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

GERSHENZON, Ye.M.; SELIVANENKO, N.Ye.; ETKIN, V.S.

Use of tunnel diodes in radio engineering circuits.
Elektrosviaz' 15 no.8:11-19 Ag '61. (MIRA 14:7)
(Transistor circuits) (Diodes) (Transistors)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

ACCESSION NR: AT3011981 S/2657/63/000/009/0029/0035

AUTHORS: Gershenzon, Ye. M.; Gurvich, Yu. A.; Litvak-Gorskaya, L. B.

TITLE: An ultra-high frequency modulator based on the Suhl effect

SOURCE: Poluprovodnikovy*ye pribory* i ikh primeneniye. Sbornik statey, no. 9, 1963, 29-35

TOPIC TAGS: ultra-high frequency, modulator, Suhl effect, carrier, absorption, surface recombination, wave guide, Lorentz force, Ge, diffusion length, Si

ABSTRACT: Modulating action of a modulator involves control of ultra-high frequency absorption by changing carrier concentration in the semiconducting material placed in the wave guide when mutually perpendicular electrical and magnetic fields are applied to this material. The setup is shown in Fig. 1 (see Enclosures). The Lorentz force thus arising deflects the carriers to one side of the plate or the other, depending on the mutual orientation of the fields. When the rate of surface recombination is substantially different on opposite sides of the plate, there occurs in the plate either an increase or decrease in total number of carriers. Tests were made on Ge ($\rho \approx 45$-55 ohm cm, diffusion length of about 2 mm) in plates 50 x 10 x 0.3 to 50 x 10 x 0.7 mm. One side of the plate was etched in boiling

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ACCESSION NR: AT3011981

H_2O_2 to give a surface-recombination rate of 100-300 cm/sec. The rate on the other side, which was roughened with emery paper, was about 10 000 cm/sec. This difference in rate on opposite sides gave rise to nonlinear volt-ampere characteristics, shown in Fig. 2 (see Enclosures). Relationships of depth of modulation, efficiency of modulator, and time for establishing pulse are summarized in Figs. 3, 4, and 5 (see Enclosures). The authors conclude that Si has considerable promise for modulators /computed at high power levels. Orig. art. has: 6 figures.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 14Oct63 ENCL: 05

SUB CODE: PH NO REF SOV: 001 OTHER: 005

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

L 13023-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD
ACCESSION NR: AP3000633 S/0181/63/005/005/1477/1478

56
53

AUTHOR: Gershenzon, Ye. M.; Litvak-Gorskaya, L. B.

TITLE: Drift-velocity saturation of hot carriers in p-type germanium

SOURCE: Fizika tverdogo tela, v. 5, no. 5, 1963, 1477-1478

TOPIC TAGS: drift mobility, drift velocity, carrier, p-type Ge

ABSTRACT: The authors set up experiments to study the saturation of the drift velocity of carriers in strong electrical fields by using samples of p-Ge having different values of resistivity. Measurements were made along the [100] axis. The purpose of the work was to discover the cause of discrepancy between results of K. Seeger (Phys. Rev., 114, 2, 1959) and J. Zucker (J. Phys. Chem. Solids, 12, 3/4, 1960) on high-resistance samples. Changes in carrier mobility were determined from the volt-ampere characteristics of the specimen and by the absorption of ultra-high frequency energy transmitted through it. At room temperature no saturation of drift velocity was observed, but at 77K the slope of the plotted curve at values of 3.5-7 kv/cm for the field indicates that saturation is attained. The relationship between mobility and strength of electrical field

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L 13023-63
ACCESSION NR: AP3000633

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is the same for materials of different resistivity (from 8 to 40 ohm cm). "The authors express their gratitude to Yu. A. Gurvich and I. K. Morozov for helping with the experiments and for discussing the results with them." Orig. art. has: 2 figures.

ASSOCIATION: Moskovskiy gosudarstvennyy pedagogicheskiy institut im. V. I. Lenina (Moscow State Pedagogical Institute)

SUBMITTED: 30Nov62 DATE ACQ: 11Jun63 ENCL: 00

SUB CODE: 00 NO REF SOV: 000 OTHER: 005

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L 17997-63 EWT(1)/EWG(k)/BDS AFFTC/ASD/ESD-3/IJP(C) Pz-4 AT

ACCESSION NR: AP3001279 S/0181/63/005/006/1605/1610

AUTHORS: Gershenzon, Ye. M.; Gurvich, Yu. A.; Litvak-Gorskaya, L. B.

TITLE: Magnetic-concentration effect in semiconductors

SOURCE: Fizika tverdogo tela, v. 5, no. 6, 1963, 1605-1610

TOPIC TAGS: semiconductor, magnetic-concentration effect, surface recombination, free path, electron density, hole density

ABSTRACT: The authors examine an approximation theory of changes in resistance of plates for the case when considerable changes in resistance are possible, i.e., when the ratio of electron to hole density differs from unity by an appreciable factor and when the rates of surface recombination at opposite edges differ sharply. A theory was first developed for a plate in which the thickness is small compared to the length and width. A magnetic field was considered to be directed along the width, an electrical field along the length. The values of specific resistance of the plate in the imposed fields and without the fields was computed and plotted. Such values were then obtained by experiment on an actual plate. A comparison of the two sets of values is shown in Fig. 1 (see enclosure). The authors conclude that their theory may be used to evaluate the efficiency of ultra-high-frequency modulators.

Card 1/3 ASSOCIATION: Moscow State Pedagogical Institute

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GERSHENZON, Ye.M.; LYUBIMOVA, T.F.; ROZHKOVA, G.I.; ETKIN, V.S.

Dynamic characteristics of a stage with variable capacitance and low level of regeneration. Izv. vys. ucheb. zav.; radiotekh. 6 no.3:303-304 My-Je '63. (MIRA 16:9)

1. Rekomendovano kafedroy eksperimental'noy fiziki Moskovskogo pedagogicheskogo instituta imeni Lenina.
(Parametric amplifiers)

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

ETKIN, Valentin Semenovich; GERSHENZON, Yevgeniy Mikhaylovich. Prinimali uchastiye LAVUT, A.P.; LYUBIMOVA, T.F.; SOTNA, N.V.; KHOTUNTSEV, Yu.L.; ROZHKOVA, G.I.; KARMANOVA, Ye.S.; STRUKOV, I.A.; VYSTAVKIN, A.N., retsenzent; ARONOV, V.L., retsenzent; MASHAROVA, V.G., red.

[Superhigh-frequency parametric systems using semiconductor diodes] Parametricheskie sistemy SVCh na poluprovodnikovykh diodakh. Moskva, Sovetskoe radio, 1964. 351 p. (MIRA 17:11)

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ASSOCIATION: Moskovskiy pedinstytut im. V. I. Lenina (Moscow Pedagogical

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ACCESSION NR [illegible]

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

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ACCESSION NR: AP4046668

extensive computations. The present work gives a kinetic theory of cyclotron

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

ASSOCIATION: Moskovs'kiy pedinstytut im. V. I. Lenina (Moscow Pedagogical Institute)

SUBMITTED: 05Jun53 ENCL: 00

SUB CODE: MP, EE NO REF SOV: 002 OTHER: 005

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

L 05298-67 EWT(d)/EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AR6031905 SOURCE CODE: UR/0058/66/000/006/H043/H044

AUTHOR: Babenko, S. P.; Blagosklonskaya, L. Ye.; Gershenzon, Ye. M.; Orlov, L. A.; Litvak-Gorskaya, L. B.

16
B

TITLE: SHF semiconductor modulators

SOURCE: Ref. zh. Fizika, Abs. 6Zh304

REF SOURCE: Tr. I-y Mezhvuz. konferentsii ped. in-tov po radiofiz. i spektroskopii. M., 1965, 175-186

TOPIC TAGS: shf semiconductor modulator, injection, exclusion, magnetoconcentration effect, modulator

ABSTRACT: Control of Ge conductivity through the variation of the minority carrier concentration during injection, exclusion, and in the magnetoconcentration effect is investigated. To achieve adequate efficiency for a modulator using the increased carrier-concentration effect, resulting from the introduction of carriers through a p-n junction (injection), it is necessary to use a pure high-impedance material ($\sim$50 ohm. cm). Moreover, carrier concentration should vary in it 15--20 times, which corresponds to variations in resistivity from 50 to 3.5--2.5 ohm. cm. When use is made of the phenomenon of exclusion, which means that

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ACC NR: AR6031905

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the specimen is deficient in minority carriers, a substantial variation in the impedance of high-resistance Ge can be produced by direct SHF-power heating. It is calculated that with the use of the magnetoconcentration effect with the specimen resistivity of over 45 ohm. cm, a diffusion length of 2—3 mm and recombination rates on the faces of $S_2 \simeq 100$ cm/sec and $S_1 \simeq 10^4 - 10^5$ cm/sec, the impedance is expected to vary by factors of 10—20 (with an increase in the total quantity of carriers) and by factors of 2—3 (with a decrease in the quantity of carriers). All these above-mentioned effects are recommended for use in the development of waveguide-type SHF modulators which, in principle, are absorption devices. Diagrams of the arrangement of thin Ge specimens in waveguides, as well as a block diagram of an experimental system, are given in the original article. A description is given of the methods of measuring the basic parameters of a modulator. G. Slobodenyuk. [Translation of abstract]

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Card 2/2 egk

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

[illegible] SOURCE CODE: [illegible]/0053/66/000/[illegible]/E092/E092

AUTHOR: [illegible]; Germenzon, Ye. M.; Gurvich, Yu. A.; Ptitsina, N. G.

TITLE: Investigation on the warming up of the charge carrier in Ge at cyclotron resonance

SOURCE: Ref. zh. Fizika, Abs. 6E722

REF SOURCE: Tr. 1-y Mezhvuz. konferentsii ped. in-tov po radiofiz. i spektroskopii. M., 1965, 187-205

TOPIC TAGS: cyclotron resonator, microwave spectroscope, shf spectrometer, charge carrier, germanium, hot electron

ABSTRACT: The cyclotron resonance of hot electrons in Ge is investigated both theoretically and experimentally. Theoretically, it is shown that, in the case of medium and strong electric fields, the isotopic part of the distribution function depends on the incident radiation frequency. In the case of strong fields, an expression is derived for the shape of the resonant line. The investigations were carried out on three Ge specimens at a frequency of 9.7 cps at T = 4.2K. An autodyne TWT microwave spectroscope using a reflecting operating resonator,

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ACC NR: AT6031365

which is connected in the external feedback circuit of the oscillator by means of a double T-bridge, is used as the SHF-spectrometer. The curves of the dependence of value $(\omega\tau)^{-1}$ (where ω is the frequency, τ — the mean time of pulse relaxation) on incident power have the following three peculiarities: 1) smaller m* (m* is the effective mass) have a smaller $(\omega\tau)^{-1}$ at smaller powers; 2) for small m*, the curves have a greater incline; 3) for large m*, the curves diverge considerably. For smaller m*, the curves virtually coincide. An interpretation of these peculiarities, which takes into consideration the power energy zone structure in p-Ge, is given. F. Nad'. [Translation of abstract]

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000514920002-8

L 2292-66 EWT(1)/T/EWA(h) IJP(c) AT

ACCESSION NR: AP5014569 UR/0181/65/007/006/1706/1709

AUTHOR: Gershenzon, Ye. M.; Gurvich, Yu. A.; Rabinovich, R. I.

TITLE: Concerning the interaction between carriers in semiconductors

SOURCE: Fizika tverdogo tela, v. 7, no. 6, 1965, 1706-1709

TOPIC TAGS: cyclotron resonance, electron interaction, semiconductor carrier, line broadening

ABSTRACT: The authors consider the possibility of using cyclotron resonance (CR) for the observation and investigation of the interaction between definite groups of carriers, such as electrons belonging to two different minima of the conduction band. A hypothetical experiment is proposed, in which two electromagnetic waves with different frequencies and different powers are incident on the sample. The response of one group of electrons to the power of the electromagnetic wave at the frequency of the second group should manifest itself in an increase in the energy of the electrons of the first group

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