

Distribution of random voltages ...

25815  
S/142/60/003/006/005/016  
E033/E135

$$h(t) = \sum_{k=0}^{\infty} \delta(t - kT) e^{-k\alpha T} = \sum_{k=0}^{\infty} \delta(t - kT) \cdot m^k$$

where:  $\alpha = \frac{1}{T} \log \frac{1}{m}$ ;  $\delta(t)$  is a delta-function.

When a voltage  $u(t)$  acts at the input to the accumulator, the voltage at its output  $U(t)$  will be equal to the weighted sum of of the values of the input voltage at discrete instants of time: X

$$U(t) = \sum_{k=0}^{\infty} u(t - kT) e^{-k\alpha T} = \sum_{k=0}^{\infty} u(t - kT) \cdot m^k \quad (1)$$

If the detector is non-coherent, then, when the voltage at the input conforms to the normal distribution, the distribution of the output voltages will differ from the normal. Initially, the cumulants of the voltage distributions at the accumulator output are determined and the connection between the cumulants of the  $n$ th order at the output and at the input of the accumulator is established. Knowledge of the cumulants of any order of the output  
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voltage enables the distribution law of this voltage to be obtained to any desired degree of accuracy. This law can be presented either in the form of an Edgeworth series or in the form of a system of Laguerre orthogonal functions. The Edgeworth series has been examined in previous literature (Ref.5: G. Kramer, Matematicheskiye metody statistiki, Izd-vo in. lit-ry, 1948) and (Ref.6: B.P. Levin, Izd-vo Sovetskoye radio, 1958), and therefore only the Laguerre system is considered in this article. The coefficients of both series are expressed by the cumulants of the output voltage distribution. The Edgeworth series are suitable in the case where the investigated process approximates to the normal, e.g. the voltage at the output of a non-coherent accumulator consisting of a linear detector and an accumulator having an exponential weighting function corresponding to  $m = 0.8-0.95$ , the input voltage being a train of a large number of pulsed signals accompanied by noise. With square-law detection and an accumulator ( $m = 0.8-0.95$ ) the distribution law of the output voltage differs significantly from normal, and it is then more convenient to use the Laguerre orthogonal system.

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E033/E135

Corresponding Member of the AS USSR, Yu.B. Kobzarev advised in this work.

There are 1 figure and 9 references: 6 Soviet-bloc and 3 English. The English language references read as follows:

- Ref.1: A.E. Bailey. Integration in pulse radar systems. Book "Communication Theory" London, Butterworths Scientific Publications, 1953, p.221.
- Ref.2: W.D. White, A.E. Ruvin. Recent Advances in the Synthesis of Comb Filters. Convention Record IRE, 1957, Part 2, p.186.
- Ref.7: R.C. Emerson. First Probability Densities for Receivers with Square Law Detectors. J. Appl. Phys., 1953, V.24, No.9, 1168.

ASSOCIATION: NIRFI pri Gor'kovskom gos. Universitete im. N.I. Lobachevskogo (NIRFI at Gor'kiy State University imeni N.I. Lobachevskiy)

SUBMITTED: to the Editors of NDVSh, March 11, 1959.  
to the Editors of Izv.vuz Radiotekhnika, February 4, 1960.

Card 4/5

S/194/62/000/003/020/066  
D230/D301

6.9200

AUTHOR: Lezin, Yu. S.

TITLE: On a synthesis of optimal filters using inter-correlation devices

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 3, 1962, abstract 3-2-132-shch (Tr. Gor'kovsk. politekhn. in-ta, 1960, 16, no. 2, 74-78)

TEXT: It is shown that an optimal filter, according to the Neuman-Pearsons criterion, is a computer defining the inter-correlation function of the input and the effective signals. A design method for such filters is given. Conformity is established between the optimal filters for single pulses and the pulse-train envelope. As an example, a design for the square of a triangular pulse and for the square of a triangular pulse-train envelope is discussed. 3 figures. 5 references. [Abstracter's note: Complete translation.]

✓B

Card 1/1

S/194/61/000/012/083/097  
D271/D301

6.9400

AUTHOR: Lezin, Yu. S.

TITLE: Distribution law of random voltages at the output of a square law register with exponential weighing function

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika; no. 12, 1961, 6; abstract 12I52 (Tr. Gor'kovsk. politekhn. in-ta, 1960, v. 16, no. 2, 79-81)

TEXT: Common action is considered of a signal, consisting of periodical radio pulses, and of normal noise on a system formed by a square law detector and an adder with a feedback loop containing a delay line; the delay line is connected via a network with exponential weighing function and a transfer coefficient lower than unity. The delay time is equal to the pulse repetition period. The problem of calculating the probability density of voltages at the output of the system is formulated. In view of difficulties of a general solution, the probability density of output voltages is

✓  
B

Card 1/2

MORUGIN, L.A. Primal uchastiye LEZIN, Yu.S.; ITSKHOKI, Ya.S., prof.,  
doktor tekhn. nauk, retsenzent; KRIZE, S.N., prof., doktor tekhn.  
nauk, retsenzent; SUKHANOV, Yu.I., red.; SAUROV, B.V., tekhn. red.

[Pulse systems with delayed feedback] Impul'snye ustroistva s za-  
pazdyvaiushchei obratnoi sviaz'iu. Moskva, Izd-vo "Sovetskoe radio,"  
1961. 207 p. (MIRA 14:12)  
(Pulse techniques (Electronics)) (Delay lines)

9.7500

26800  
S/142/61/004/002/002/010  
E033/E435


**AUTHOR:** Lezin, Yu, S.

**TITLE:** On a non-coherent accumulator with an exponential weighting function

**PERIODICAL:** Izvestiya vysshikh uchebnykh zavedeniy, Radiotekhnika, 1961, Vol.4, No.2, pp.148-154

**TEXT:** The aim of this article is to determine approximately the threshold signal/noise ratio detectable by a non-coherent accumulator with an exponential weighting function (EWF). Such apparatus comprises a non-coherent (amplitude) detector followed by an integrator with a delayed feedback loop, the factor  $m$  of which is less than unity. The threshold signals of square-law and linear accumulators with EWF for rectangular pulse signal trains accompanied by Gaussian noise are determined. The threshold signal/noise ratios of coherent and non-coherent accumulators with EWF are compared and the gain due to an integrator with EWF after a non-coherent detector calculated. Approximate expressions are obtained for the probability  $D$  of correct observation (PCO) and for the probability  $F$  of false alarm (PFA) for square-law and linear accumulators with EWF.

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S/142/61/004/002/002/010  
EO33/E435

On a non-coherent ...

Comparison of the threshold signal/noise ratios shows that there is not more than 15% difference between the threshold signal/noise ratios for square-law and linear non-coherent accumulators with EWF and, when the number of pulses  $N$  is high, the threshold signal/noise ratios are almost the same. However, when a coherent accumulator with EWF is replaced by a non-coherent accumulator with EWF, then a power gain of the order of 2 to 2.5 is obtained ( $D = 0.9$ ). For relatively long pulse trains and when  $F = 10^{-4}$ , the power gain due to using an accumulator with EWF after a linear detector equals 4.6 for  $m = 0.8$ , 7.5 for  $m = 0.9$  and 11.4 for  $m = 0.95$ . Thus, a non-coherent accumulator with EWF ( $m \geq 0.8$ ) gives a significant reduction in the minimum signal/noise ratio. There are 6 figures (curves showing the threshold signal-to-noise ratios for the different accumulators under different conditions, e.g. with different values of  $m$  etc, and curves showing the gain under different conditions) and 6 references: 5 Soviet and 1 non-Soviet. The reference to an English language publication reads as follows:  
Pachares J. IRE Trans., 1958, IT-4, No.1, 38.

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26800  
S/142/61/004/002/002/010  
E033/E435

On a non-coherent ...

ASSOCIATION:

NIRFI pri Gor'kovskom gos. universitete  
im. N.I.Lobachevskogo (NIRFI at Gor'kiy State  
University imeni N.I.Lobachevskiy)

SUBMITTED:

May 8, 1959 (to NDVSh)  
February 4, 1960 (to Izv. VUZ Radiotekhnika)



Card 3/3

20569

S/109/61/006/002/001/023  
E140/E435

9,2550 (also 1031)

AUTHOR: Lezin, Yu. G. S.

TITLE: Noise Accumulation in Delayed Feedback Devices

PERIODICAL: Radiotekhnika i elektronika, 1961, Vol.6, No.2,  
pp.187-192

TEXT: The article considers the problem of comb filters consisting of an accumulator circuit, a filter  $\Phi$ , an all-pass attenuator with transfer factor  $m$ , and a delay line  $T$  with delay corresponding to one repetition period of the pulses to be detected (Fig.1). L.A.Morugin (Ref.3) has previously considered the integration of pulse systems in such devices. The present article considers the accumulation of wide normal noise. The author first considers the case of a single accumulator for which he finds that the integrated noise at the output of the circuit is given by

$$\sigma_2^2 = \int_0^\infty F_1(\omega) K_1^2(\omega) d\omega = a \int_0^\infty \frac{K^2(\omega) d\omega}{1 - 2mK(\omega) \cos \psi(\omega) + m^2 K^2(\omega)} \quad (3)$$

X

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S/109/61/006/002/001/023  
E140/E435

Noise Accumulation in ...

which he evaluates approximately, utilizing the fact that in this type of device the filter time constant is very small compared with the delay T. Eq.(3) can therefore be integrated by the method of slowly varying quantities. It is found that the accumulated noise power is proportional to the input noise intensity and the filter passband. The noise power for an ideal lowpass filter is given by the expression

$$g' = \frac{1}{1 - m^2}$$

The author then proceeds to consider noise accumulation for a system consisting of two or three series-connected delayed-feedback devices. It is found that the noise accumulation factor increases sharply as the feedback factor approaches unity and with  $m = 0.9$  reaches 291 for two series-connected devices and 142600 for three devices. This results from the fact that at the output of the first comb filter the remaining noise is already strongly correlated. There are 3 figures and 7 references: 6 Soviet and 1 non-Soviet.

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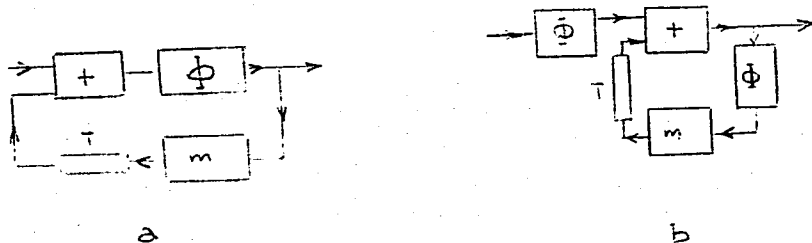
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S/109/61/006/002/001/023  
E140/E435

Noise Accumulation in ...

SUBMITTED: March 28, 1960 (initially)  
September 30, 1960 (after revision)

Fig.1.



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LEZIN, Yu.S.

Effect of the parameters of storage devices on their operational  
efficiency. Radiotekh. i elektron. 6 no.4:529-535 Ap '61.  
(MIRA 14:3)

(Radio filters)

34027

S/109/62/007/001/004/027  
D273/D301

6,9440

AUTHOR: Lezin, Yu.S.

TITLE: On the efficiency of a system of frequency filter and storage system with a delayed feedback circuit

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 1, 1962, 39-45

TEXT: The author calculates the gain in signal to noise ratio which is provided by a frequency filter and a storage system assembly with a delayed feedback circuit, in comparison with an optimum filter for a single pulse signal. The band-pass width is also examined. An optimum filter for a square wave of N square shaped pulses applied together with white Gaussian Noise, consists of an optimum filter for a single pulse signal, a summing system with a feedback circuit delaying for a time T equal to the repetition rate of the pulses, an assembly delaying for a time NT, and a read-out system. An integrated pulse of lengths  $\tau$  enters the optimum filter and a saw-tooth pulse appears at the output of twice the length and of amplitude  $U_1 \tau$  where  $U_1$  is the amplitude of the in-going pulses.

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S/109/62/007/001/004/027  
D273/D301

On the efficiency of a system of ...

The wave-train of these saw-tooth pulses is applied to the input of the summing system where the amplitude is increased N times. This potential is applied to the input of the read-out system and the output potential is a wave-train of pulses, the maximum value of which coincides with the termination of the wave-train at the input. The optimum filter for the single pulse can be replaced by a simpler RC-filter of lower frequency  $\Phi_1$  with transfer function

$$K_1^*(\omega) = \frac{1}{1 + \frac{j\omega}{2\pi \Delta F_1}}$$

where  $\Delta F_1$  is its band-pass. An attenuator with a transfer coefficient m has to be included in the circuit in order to prevent self-oscillation of the summing system and it is shown how a practical approximation to an optimum filter is a combination of a frequency filter, a summing system and a feedback circuit with a delay time T, an attenuator of coefficient m and a filter  $\Phi$  [Abstractor's note: This should probably read  $\Phi_2$ ]. There are 5 figures and 6 Soviet-bloc references.

SUBMITTED: January 2, 1961

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ACCESSION NR: AR4023746

S/0274/64/000/001/A007/A007

SOURCE: RZh. Radiotekhnika i elektrosvyaz', Abs. 1A31

AUTHOR: Bugrov, G. M.; Lezin, Yu. S.

TITLE: Propagation of a pulse signal and noise through a system consisting of a frequency filter and two storage units with delayed feedback

CITED SOURCE: Tr. Gor'kovsk. politekhn. in-ta, v. 18, no. 2, 1962, 33-41

TOPIC TAGS: pulse signal, noise background, signal from noise separation, frequency filter, frequency discriminator, delayed feedback, noise accumulation, time shift of signal maximum, signal peak transfer coefficient

TRANSLATION: The authors consider the propagation of a sequence of

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ACCESSION NR: AR4023746

pulse signals and noise through a system consisting of a frequency filter  $F_1$  and two storage units with delayed feedback and filters  $F_2$  connected in the feedback channels. The signal at the output of the system is determined by means of the convolution theorem

$$u_3(t) = \int_0^t h(t-x) \cdot u_2(x) dx$$

where  $h(t)$  is the impulse transfer function of one of the delayed-feedback storage units, and  $u_2(x)$  is the output voltage of the first storage unit. It turns out that when  $F_1$  and  $F_2$  have limited bandwidths the signal reaches its peak value not at the instant when the pulse terminates, but somewhat later. The narrower the bandwidth of  $F_1$  and  $F_2$ , and the larger the feedback factor, the larger the shift of the maximum of the output signal. Both the duration of the shift in the output-signal maximum and the transfer coefficient of

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ACCESSION NR: AR4023746

the peak value of the signal were calculated. Calculation shows that the noise is accumulated to a considerably higher level in the second storage unit than in the first. The reason for it is that after passage of the noise through the first storage unit the instantaneous values of the noise, separated by time intervals that are multiples of  $T$ , turn out to strongly correlated with one another. Bibliography, 3 titles. Yu. Sh.

DATE ACQ: 03Mar64

SUB CODE: GE

ENCL: 00

Card 3/3

LEEIN, Yu.S.; ZHUKOV, D.V., inzh.

Integral noise distribution function at the output of a  
quadratic exponential-weight storage device. Trudy GFI '88  
no.2:12-45 '62. (MIRA 17:8)

LEZIN, Yu.S.

More about noise storage in devices with delayed feedback.  
Radiotekh. i elektron. 7 no.5:917-918 My '62. (MIRA 15'4)  
(Delay lines) (Electric filters)

LEZIN, Yuriy Sergeyevich; BASHARINOV, A.Ye., retsenezent; TIKHONOV,  
V.I., retsenezent; IVANUSHKO, N.D., red.; BELYAYEV, V.V.,  
tekh. red.

[Optimal filters and pulse signal storing devices] Opti-  
mal'nye fil'try i nakopiteli impul'snykh signalov. Moskva,  
Sovetskoe radio, 1963. 319 p. (MIRA 16:7)

(Electric filters)

(Pulse techniques (Electronics))

L 14517-63 EWT(d)/FCC(w)/BDS ASD/ESD-3/APGC Pg-4/Pk-4/Po-4/  
 Pq-4 GG/IJP(C)

ACCESSION NR: AP3004369

S/0109/63/008/008/1355/1360

AUTHOR: Lezin, Yu. S.; Bugrov, G. M.

TITLE: On the advisability of adding a second storage stage with delayed feed-  
 back 8

SOURCE: Radiotekhnika i elektronika, v. 8, no. 8, 1963, 1355-1360

TOPIC TAGS: receiver, amplifier, pulse amplifier, feedback, delayed feedback,  
 pulse storage, memory, memory circuit, signal-to-noise ratio

ABSTRACT: In the reception of a pulse-train signal the increase in signal-to-  
 noise ratio that can be realized by adding a storage stage with delayed feed-  
 back is analyzed, and the possibility of further improvement by adding a second  
 identical stage is investigated. In the circuit shown in Fig. 1 of Enclosure,  
 filters  $F_1$  and  $F_2$  are assumed to have passbands appreciably greater than the  
 repetition frequency of the arriving pulses, which are assumed to be rectangular  
 and of equal amplitude. The accompanying noise is assumed white and of normal  
 distribution. A train of  $N$  pulses is considered, where  $N$  is sufficiently large  
 that  $m^N \ll 1$ , where  $m$  is the feedback coefficient. Expressions are then derived  
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L 14517-63

ACCESSION NR: AP3004369

for peak output signal and noise power, from which the effect of adding the second stage is evaluated. These show that the relative gain in the signal-to-noise ratio is

$$\frac{(1+m)^2}{1+m^2},$$

which is essentially 2 for  $m$  in the range 0.8—1.0. In particular, the relative gain for a relatively narrow bandpass in input filter  $F_1$  approaches the value 2 monotonically as the bandpass of  $F_2$  was widened. At a wider  $\Delta F_1$ , the gain factor may initially slightly exceed 2 but eventually converges to 2 with increased  $\Delta F_2$ . These considerations suggest that the potential gain in signal-to-noise ratio may in some cases justify the added complexity of a second stage. By way of comparing the described dual delay circuit to a single optimum filter stage, the gain in the signal-to-noise ratio of the former over the latter would be as high as 64 for  $m = 0.95$ . Orig. art. has: 3 figures and 9 formulas.

ASSOCIATION: none  
SUBMITTED: 14Jul62  
SUB CODE: GE

DATE ACQ: 20Aug63  
NO REF SOV: 003

ENCL: 01  
OTHER: 000

Card 2/32

LEZIN, Yu.S.; ZABEGALOV, B.D.

Noise distribution at the output of a system consisting of two RC filters with intermediate square-law device. Radiotekhnika 18  
no.8:67-68 Ag '63. (MIRA 16:10)

1. Deystvitel'nyye chleny Nauchno-tekhnicheskogo obshchestva radiotekhniki i elektrosvyazi imeni Popova.

I. 239C1-65 EEO-2/EWT(a)/EEC-4/EEB-2

ACCESSION NR: AP5002038

S/0142/64/007/005/0570/0076

AUTHOR: Lezin, Yu. S.

TITLE: Threshold signal-to-noise ratio in autocorrelation reception of fluctuating signals

SOURCE: IVUZ. Radiotekhnika, v. 7, no. 5, 1964, 570-576

TOPIC TAGS: signal noise ratio, autocorrelation reception, signal noise threshold

ABSTRACT: Inasmuch as the signal-to-noise ratio (SNR) characterizes a process which has a normal distribution and noise distribution is known, autocorrelation reception essentially differs from non-correlation reception. The article offers formulas for calculating the threshold SNR in a receiver used for detection based on the Neuman-Pearson criterion. A formula for the coefficient of correlation of an additive mixture of a normally fluctuating signal and normal noise is developed, as well as the law of distribution of probabilities of signal-noise mixture at the output of an autocorrelation device. Probabilities of correct detection and false alarm are determined.

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L 23901-65

ACCESSION NR: AP5002038

of arbitrarily correlated fluctuating signals in the presence of an arbitrarily correlated noise. Detection characteristics for (a) a square-law detector, (b) non-correlated noise and arbitrarily correlated signal, (c) infinitely growing SNR, and (d) noncorrelated signals and noise are considered. Formulas for the threshold SNR for autocorrelation reception and noncorrelated noise are derived. Gain in the power SNR is evaluated when the square-law detection is replaced by the autocorrelation detection; with completely correlated signals, this gain is about 2 and is independent of the level of the correct-detection probability. In detecting slightly correlated signals, the autocorrelation device is less efficient than the square-law detector, loss in SNR sharply increases as the correct-detection probability approaches 0.5. Original has 14 figures and 17 formulas.

ASSOCIATION: none

SUBMITTED: 14Oct63

ENCL: 00

SUB CODE: EC

NO REF SOV: 007

OTHER: 005

ATD PRESS: 3178

Card 2/2

ACCESSION NR: AP4040910

S/0109/64/009/006/0966/0974

AUTHOR: Lezin, Yu. S.

TITLE: Storage system efficiency with any number of pulse signals

SOURCE: Radiotekhnika i elektronika, v. 9, no. 6, 1964, 966-974

TOPIC TAGS: signal transmission, signal storage, signal storage efficiency

ABSTRACT: Formulas are developed for the coefficient of signal transmission and for the noise accumulation in a system consisting of a frequency filter and a delayed-feedback storage device; also, the gain in the signal-to-noise ratio provided by the above system as compared to an optimum filter (for a unit pulse signal) is evaluated; a compensation of additional signal delay in the feedback channel is provided. It is assumed that the frequency filters have bell-shaped characteristics and that the signal is represented by a rectangular packet of N bell-shaped video pulses. The new formulas are valid for any number of stored

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ACCESSION NR: AP4040910

pulse signals and can be easily evaluated numerically on a computer. Graphs are also developed for selecting parameters of the storage system and calculating its efficiency. It is proven that the additional-delay compensation alleviates the necessity of a wide feedback passband which may simplify design of the storage device. Orig. art. has: 6 figures, 23 formulas, and 1 table!

ASSOCIATION: none

SUBMITTED: 08Jul63

ENCL: 00

SUB CODE: EC

NO REF SOV: 007

OTHER: 000

Card 2/2

ACCESSION NR: AP4029460

S/0108/64/019/004/0046/0051

AUTHOR: Lesin, Yu. S. (Active member); Shternov, A. A. (Active member)

TITLE: Noncoherent exponential-weight storage of packets of pulse signals with nonsquare envelopes

SOURCE: Radiotekhnika, v. 19, no. 4, 1964, 46-51

TOPIC TAGS: pulse signal, pulse packet, nonsquare envelope, pulse packet storage, radar detection

ABSTRACT: An approximate calculation is made of the threshold signal-to-noise ratio for two nonsquare cases of pulse-packet envelopes. For triangular and sinusoidal envelopes, formulas are developed for the probability of correct radar detection; also, the threshold signal-to-noise ratio vs. pulse number per packet curves are presented; a square-law exponential-weight packet storage is assumed. It is proven that, with a constant maximum signal amplitude and pulse

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ACCESSION NR: AP4029460

number per packet, a change in the envelope shape -- from triangular to sinusoidal or from sinusoidal to square -- results in a reduction of the threshold signals. This may be explained by an increase in the energy of the packet. Orig. art. has: 3 figures and 16 formulas.

ASSOCIATION: Nauchno-tehnicheskoye obshchestvo radiotekhniki i elektrosvyazi  
(Scientific and Technical Society of Radio Engineering and Electrocommunication)

SUBMITTED: 12Feb63

DATE ACQ: 30Apr64

ENCL: 00

SUB CODE: EC, DC

NO REF SOV: 005

OTHER: 000

Card 2/2

L 4017-66 EWT(1)/EWA(h) JM  
ACCESSION NR: AR5008933

S/0274/65/000/002/A013/A013  
621.391.172

SOURCE: Ref. zh. Radiotekhnika i elektrosvyaz'. Svodnyy tom, Abs. 2A59 <sup>18</sup> B

AUTHOR: Lezin, Yu. S.

TITLE: Synthesizing optimal filters <sup>25</sup> in a correlated-noise <sup>25</sup> case

CITED SOURCE: Tr. po radiotekhn., elektrotekhn. i energ. Gor'kovsk. politekhn. in-t, v. 20, no. 2, 1964, 55-58

TOPIC TAGS: optimal filter, correlated noise

TRANSLATION: Optimal filters have been constructed for detecting a rectangular video pulse with a correlated noise as a background; the energy spectrum of the noise is a function of the frequency  $F(\omega)$ . The filter is synthesized by a spectral method which includes selection of a linear system having this transfer function:

$$\bar{K}(\omega) = \frac{\bar{A}S^*(\omega)e^{-t_0\omega}}{F(\omega)}$$
, where  $S^*(\omega)$  is the function complex-conjugate with the signal spectral density;  $A$ ,  $t_0$  are arbitrary constants. Two types of correlated noise obtained from transmitting the white noise through low-pass and high-pass RC-

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ACCESSION NR: AR5008933

filters are considered. In the first case, the noise is exponentially correlated; with a normal distribution law, it is a simple Markov process. Its transfer function is:  $\bar{K}(\omega) = \left(\frac{1}{j\omega} - \Delta^2/j\omega\right)(1 - e^{-j\omega\tau})$ , where  $\Delta$  is the filter time constant. As  $1/j\omega$ ,  $j\omega$ ,  $e^{-j\omega\tau}$  describe the transfer functions of the integrator, differentiator, and  $\tau$ -time delay circuit, the optimal filter contains the above elements, 2 subtractors, and an amplifier having a gain  $\Delta^2$ . In the second case, when the noise is represented by a difference between the white noise and the above exponentially correlated noise, the transfer function is given by:  $\bar{K}(\omega) = \frac{1}{j\omega} \left[ \Delta^2 - \frac{1}{(j\omega)^2} \right] (1 - e^{-j\omega\tau})$  and the filter, therefore, includes three integrators, an amplifier, a delay circuit, and two subtractors. Optimal-filter synthesizing proved that their structure essentially depends on the correlation of noise. Bibl. 5, figs. 2.

SUB CODE: EC

ENCL: 00

Card

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2/2

L 1833-66... EWT(1)/EWA(h)

ACCESSION NR: AR5008934

VP/0274/65/000/002/A013/A013  
621.391.172

SOURCE: Ref. zh. Radiotekhnika i elektrosvyaz'. Svodnyy tom, Abs. 2A60 <sup>45</sup><sub>B</sub>

AUTHOR: Lezin, Yu. S.

TITLE: Insensitivity of the <sup>25</sup>matched-filter structure to signal-shape variation

CITED SOURCE: Tr. po radiotekhn., elektrotekhn. i energ. Gor'kovsk. politekhn. in-t, v. 20, no. 2, 1964, 59-62

TOPIC TAGS: electric filter, matched filter

TRANSLATION: Detection characteristics of a matched filter optimal for a class of specified-shape signals are analyzed; the signals differ only in their amplitudes, time positions, and initial phases. A filter matched to a square video pulse of height  $A$  and duration  $\tau$  is used as an example to study the effect of the signal shape upon the signal-to-noise ratio at the filter output. The filter consists of an integrator, a delay line for time  $\tau$ , and a subtractor. The output signal-to-noise ratios of a matched square video pulse and unmatched trapezoid

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ACCESSION NR: AR5008934

pulse are compared. It is proven that the power loss due to lack of matching monotonously decreases with the increase of the relative duration of the pulse top; with the worst (triangular) shape, the power loss is only 13.5%. Such insensitivity is due to the fact that the criterion of maximum signal-to-noise ratio is integral, Bibl. 3.

SUB CODE: EC

ENCL: 00

Card 2/2

ACCESSION NR: AR5004865

S/0058/64/000/011/H019/H019

SOURCE: Ref. zh. Fizika, Abs. 11Zh118

AUTHOR: Lezin, Ya. S.

TITLE: On the noncriticality of the structure of a matched filter to changes in the signal waveform

CITED SOURCE: Tr. po radiotekhn. elektrotekhn. i energ. Gor'kovsk. politekhn. in-t, v. 20, no. 2, 1964, 59-62

TOPIC TAGS: matched filter, signal waveform, signal noise ratio, white noise, optimal filter

TRANSLATION: An analysis is made of the characteristic of a matched filter (detection filter in white noise) that is optimal for a whole class of signals of given waveform which differ only in amplitude, time position, and initial phase. The filter consists of an inte-

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31067-465

ACCESSION NR: AR5004865

grator, a delay line for a time  $\tau$ , and a subtracting unit. Using as an example a filter matched to a square-wave video pulse of amplitude  $A$  and duration  $\tau$ , the author studies the effect of the change in the waveform in the signal on the signal/noise ratio at the filter output. The output signal/noise ratios of the matched rectangular video pulse and mismatched trapezoidal pulse are compared. It is shown that when the signal is not matched the peak level increases most rapidly with the relative error in the signal waveform. The increase in the peak level is explained by the fact that the signal waveform is not a constant signal but is an internal noise signal.

L 51290-65 ENT(1)/EWA(h) Feb

ACCESSION NR: AP5009077

UR/0108/65/020/003/0060/0065  
621.391

AUTHOR: Lezin, Yu. S. (Active member)

TITLE: Distribution of noise at the output of an autocorrelation device

SOURCE: Radiotekhnika, v. 20, no. 3, 1965, 60-65

TOPIC TAGS: noise, noise distribution, autocorrelation device

ABSTRACT: Formulas are developed for calculating the distribution of noise voltage at the output of an autocorrelation device which consists of a delay unit, a multiplier, and a low-pass integrating (averaging) filter. The distribution laws are found for any delay time, i. e., for any correlation factor of noise at the multiplier inputs. It is assumed that the noise is normal with a zero center and has a symmetrical spectrum whose width is small compared to the central frequency; it is also assumed that the filter passband is wider than the spectrum but considerably narrower than the central frequency. It is found that the output

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L 51290-65

ACCESSION NR: AP5009077

noise distribution law greatly differs from the normal law and that the type of this distribution depends largely on the value of the correlation factor. With no correlation, the output noise obeys the Laplace symmetrical distribution law. At a full correlation, an asymmetrical exponential distribution results. Formulas are also derived for the characteristic and cumulant functions and for the cumulants of the first four orders. Differential and integral distribution functions and asymmetry and excess coefficients are calculated. Orig. art. has: 4 figures and 27 formulas.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi (Scientific and Technical Society of Radio Engineering and Electrocommunication)

SUBMITTED: 01Jul63

ENCL: 00

SUB CODE: DP, EC

NO REF SOV: 007

OTHER: 007

ci:

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Card 2/2

I. 63217-65 EWT(1)/EWA(h)

ACCESSION NR: AP5016072

UR/0108/65/020/006/0009/0012  
621.391.173

C  
B

AUTHOR: Lezin, Yu. S. (Active member)

TITLE: Numerical characteristics of a signal-noise mixture at the output of an autocorrelation device <sup>05</sup>

SOURCE: Radiotekhnika, v. 20, no. 6, 1965, 9-12

TOPIC TAGS: autocorrelation device, signal characteristic

ABSTRACT: The cumulants of any order of the output voltage of an autocorrelation device are determined when the device input is excited by an additive mixture of a nonfluctuating sinusoidal signal and a stationary Gaussian narrow-band noise. The autocorrelation device comprises a  $\tau$ -delay unit, a multiplier, and an integrating low-pass filter, whose passband is much wider than the noise-spectrum width  $\Delta f$  but considerably narrower than its central frequency. The noises being multiplied are noncorrelated:  $\tau \gg \frac{1}{\Delta f}$ . It is proven that both coefficients of asymmetry and of

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L 63217-65

ACCESSION NR: AP5016072

excess are high which means that the output voltage is distributed according to a different-from-normal law. Hence, the importance of this analysis applicable (unlike other published articles) to any order of the output voltage. Orig. art. has: 2 figures and 27 formulas.

ASSOCIATION: Nauchno-tehnicheskoye obshchestvo radiotekhniki i elektrosvyazi (Scientific and Technical Society of Radio Engineering and Electrocommunication)

SUBMITTED: 10Jul63

ENCL: 00

SUB CODE: EC

NO REF SOV: 007

OTHER: 005

Card 2/2

LEZIN, Yu.S.

Relationship between the cumulants of random voltages at the input and output of a device with square-law response characteristic. Izv. vys. ucheb. zav.; radiotekh. 8 no.3: 346-348 My-Je '65. (MIRA 18:9)



LEZIN, Yu.S.

Interference rejection of the reception of fading signals in  
frequency radiotelegraphy. Elektrosviaz' 19 no.8:77-78 Ag '65.  
(MIRA 18:9)

LEZIN, Yu.S.

Sorption dynamics of vapor under parallel translation conditions.  
Dokl. AN SSSR 164 no.1:147-149 S '65. (MIRA 18:9)

1. Submitted February 26, 1965.

L 21836-66 EWT(1)/FSS-2 WR

ACC NR: AP6003552

SOURCE CODE: UR/0109/66/011/001/0025/0031

AUTHOR: Lezin, Yu. S.

ORG: none

TITLE: Efficiency of a two-step pulse-signal accumulation system

SOURCE: Radiotekhnika i elektronika, v. 11, no. 1, 1966, 25-31

TOPIC TAGS: pulse accumulation, radar system, radar receiver, signal to noise ratio, pulse signal, electronic feedback, electronic circuit

ABSTRACT: When the number of pulse signals reflected by one target is great (many dozens, hundreds), their accumulation in one delayed-feedback device suffers a high loss of the threshold power. The use of a second accumulator with a much longer delay is suggested for noise suppression and signal-to-noise-ratio improving. The efficiency of such a two-stage system is theoretically considered with these assumptions: (a) filters have bell-shaped frequency and linear phase characteristics; (b) the two feedback delays are equal to the pulse-repetition quasi-period  $T$  and to  $N_1 T$ , where  $N_1$  is an integer, respectively; (c) the signal consists of bell-shaped pulses; (d) the noise is Gaussian and white. Formulas and curves for the signal

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51  
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UDC: 621.374.328.5:621.391.883.2

L 21836-66

ACC NR: AP6003552

transfer factor are developed. An increase in the signal-to-noise ratio is calculated. The feedback circuit of the second accumulator has a narrower passband because the number of signal circulations in this circuit is reduced. "In conclusion, the author wishes to thank S. Ya. Vyshkind for carrying out the calculations on a BESM-2 computer." Orig. art. has: 7 figures and 15 formulas.

SUB CODE: 17,09 / SUBM DATE: 07Sep64 / ORIG REF: 003

Card 2/2 nst

LEZIN, YU. S.

USSR/Physical Chemistry - Surface Phenomena. Adsorption. Chromatography. Ion Exchange, B-13

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 61217

Author: Todes, O. M., Lezin, Yu. S.

Institution: None

Title: Dynamics of Adsorption at High Concentration and with Heat Emission

Original  
Periodical: Dokl. AN SSSR, 1956, 106, No 2, 307-310

Abstract: Theoretical solution of the problem of concurrent propagation along a sorbent layer of isothermal sorption (at a velocity  $v$ ) and thermal (at velocity  $w$ ) wave induced by the presence of appreciable thermal effect during adsorption of sufficiently high concentrations of vapors from a gaseous flow. There are given the differential equations of material and thermal balance and are derived the equations for  $v$  and the correlation between  $v$ ,  $w$  and temperature of the charge  $T$ . If  $w > v$  all the emitted heat is blown off by the passing flow of gas and adsorption takes place on the cold sorbent (conditions I).

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APPROVED FOR RELEASE

LEVIN, Yu.S.

Structural characteristics of active nodes. Dokl. AN SSSR  
158 no.6:1399-1400 O '64. (MIRA 17412)

1. Predstavleno akademikom M.M. Dubininym.

LEZINA, R.

Improve the trade in staple fabrics. Sov.torg. no.10:14-15 0  
'56. (MIRA 9:12)

1. Glavayy tovaroved Ukrainskoy kontory Glavtekstil'torga.  
(Textile fabrics--Marketing)

SHOGAM, S.M.; TOMICHEVA, M.V.; LEZINA, T.A.; SUKHANOVA, Ye.N.; KOROBOVA, I.V.;  
MAKHNEV, Yu.A.

Introducing the kinetic method of determining gamma-isomers of hexa-  
chlorocyclohexane in dusts of hexachlorocyclohexane. [Trudy] NIUIF  
no.165:52-62 '59. (MIRA 13:8)

1. Predpriyatiye khimicheskoy promyshlennosti.  
(Cyclohexane)



BYSTROV, V.F.; LEZINA, V.P.

Study of hydrogen bonding by the nuclear magnetic resonance  
method. Part 2. Opt. i spektr. 16 no.5:793-796 My '62.  
(MIRA 17:9)

SMIRNOV, L.D.; LEZINA, V.P.; BYSTROV, V.F.; DYUMAYEV, K.M.

Synthesis of pyridoxine (vitamin B<sub>6</sub>) analogs. *Izv. AN SSSR. Otd.khim.*  
nauk no.4:752-754 Ap '63. (MIRA 16:3)

1. Institut khimicheskoy fiziki AN SSSR.  
(Pyridoxol)

BYSTROV, V.F.; LEZINA, V.P.

Use of the nuclear magnetic resonance method in studying  
hydrogen bonding. Part 3. Opt. i spektr. 16 no.6:1004-1012  
Je '64. (HIR 17:9)

S/020/63/148/005/017/029  
B117/B186AUTHORS: Bystrov, V. F., Dyumayev, K. M., Lezina, V. P., Nikiforov, G. A.

TITLE: Study of the hydrogen bond by the n.m.r. method. Effect of steric hindrances on the hydrogen bond in di-orthoalkylphenols

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 5, 1963, 1077 - 1080

TEXT: The steric screening effect of the OH group on the hydrogen bond of some di-orthoalkylphenols was studied by protonmagnetic resonance with the aid of the ЯМР-УС-2 (YAMR-US-2) spectrometer at a frequency of 20.529 Mc at  $20 \pm 2^\circ\text{C}$ . The chemical shift of the protonmagnetic resonance signals  $\tau$  was measured in the spectra of 2,6-xylene-, 2,6-diisopropylphenol and ionone(2,6-di-tert-butyl-4-methylphenol) as a function of their concentration in dry, alcohol-free  $\text{CCl}_4$ , ether, acetone, and triethylamine. The measurements RMS error:  $\pm 0.02$  showed that the change in the chemical shift of  $\tau$  due to the OH group may be attributed entirely to the effect of the intermolecular hydrogen bond. When the substances investigated are diluted in ether, acetone and triethylamine, the  $\tau$  are shifted towards a comparatively weak field, while, when they are diluted in  $\text{CCl}_4$  they are shifted

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S/020/63/148/005/017/029  
B117/B186

Study of the hydrogen bond by...

towards a stronger field. This shows that in the latter case the hydrogen bond between the phenol molecules is weaker. The importance of steric screening (volume of ortho-substituents) for cyclic association, in which mainly tetramers and only small amounts of dimers are formed, was studied in some alkylphenols dissolved in  $\text{CCl}_4$ . When the number of ortho-substituents is increased, the band of the bound hydroxyl is shifted to higher frequencies and the shift from the H bond  $\Delta\nu$  becomes smaller, probably due to its effective elongation. Owing to the weakening of the hydrogen bond the inhibiting activity decreases in the following order: 2,6-dimethyl-, 2,6-diisopropyl and 2,6-di-tert-butylphenyl, and a further growth of the  $\text{C}_6\text{-C}_8$  radicals is prevented. In di-ortho-alkylphenols, dissolved in  $\text{CCl}_4$  at low concentrations the chemical shift of  $\tau$  on a horizontal section is dependent on the concentration. When the number of ortho-substituents is increased the "saturation" of this dependence takes place in the region of higher concentrations. In 2,6-di-tert-butylphenol and ionone, the shift of the hydroxyl is independent of the concentration. A comparison of the shifts of the hydroxyl signal  $\Delta\nu$  on transition from the pure substance to the zeroth phenol concentration showed that the electron cloud of the O-H

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S/020/63/148/005/017/029  
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Study of the hydrogen bond by...

bond is considerably influenced by the substituents. When the alkyl group in o-position is introduced, the effect of the electric dipole field of the C-H bond can be assumed as one of the reasons for the change in the shift of the OH signal. This was confirmed by introducing a methyl group instead of hydrogen. The effect of substituents on the chemical shift of the OH group of phenols is at present being studied in detail. There are 4 figures and 1 table.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

PRESENTED: October 8, 1962, by V. N. Kondrat'yev, Academician

SUBMITTED: September 28, 1962

Card 3/3

BYSTROV, V.F.; LEZINA, V.P.; DASHUNIN, V.M.; TOVBINA, M.S.

Structure of organic compounds studied by nuclear magnetic resonance spectra. Part 3: Structure of derivatives of 3-hydroxy- $\gamma$ -pyrone and some related compounds. Zhur. ob. khim. 34 no.9:2886-2890 S '64.  
(MIRA 17:11)

1. Institut khimicheskoy fiziki AN SSSR i Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskikh i natural'nykh dushistykh veshchestv.

BYSTROV, V.F.; YERSHOV, V.V.; LEZINA, V.P.

Chemical shift of the hydroxyl signal of ortho-alkylsubstituted phenols. Opt. i spektr. 17 no.4:538-544 0 '64.

(MIRA 17:12)



SMIRNOV, L.D.; LEZINA, V.P.; BYSTROV, V.F.; DYUMAYEV, K.M.

Comparative reactivity of ortho- and para-positions of 3-hydroxy-  
pyridine in aminomethylation reaction. Izv. AN SSSR Ser. khim. no.1.  
198-200 '65. (MIRA 18:2)

1. Institut khimicheskoy fiziki AN SSSR.

BYSTROV, V.F.; LEZINA, V.P.; DASHUNIN, V.M.; BELOV, V.N. [deceased]

Structure of the condensation products of lactones with carbonyl  
compounds. Zhur.org.khim. 1 no.2:398 F '65.

(MIRA 18:4)

SMIRNOV, L.D.; LEZINA, V.F.; BYSTROV, V.F.; LYUMAYEV, K.M.

Sterically hindered 3-hydroxypyridines. Report No.5: Proton magnetic resonance method and chemical methods of studying the course of reactions of amino- and hydroxymethylation in the 2-alkyl-3-hydroxypyridine series. Izv. AN SSSR.Ser.khim. no.10:1836-1845 '65.

(MIRA 18:10)

1. Institut khimicheskoy fiziki AN SSSR.

LEZINA, V.P.; BYSTROV, V.F.; SMIRNOV, I.O.; BYUMSYEV, K.M.

Electronic structure of 3-hydroxypyridines. Part 1: Proton magnetic resonance spectra and calculation by the methods of molecular orbitals and linear combination of atomic orbitals. Teoret. i eksper. khim. 1 no. 7:281-289 My-Ja '65.

Electronic structure of 3-hydroxypyridines, Part 2: Chemical reactivity of 3-hydroxypyridines. Ibid. 290-294 (MIRA 18:9)

1. Institut khimicheskoy fiziki AN SSSR, Moskva.

MAGDESIYEVA, N.N.; TITOV, V.V.; BYSTROV, V.F.; LEZINA, V.P.; YUR'YEV, Yu.K.

Structure of  $\beta$ - and bis- $\beta$ -diketones of the selenophene series.  
Zhur. struk. khim. 6 no.3:402-406 My-Je '65.

(MIRA 18:8)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova i  
Institut khimicheskoy fiziki AN SSSR.

1699-65 ENT(m)/ENA(d)/T/ENI(t)/ERI(k)/EAI(z)/EAI(b)/EAI(c) FI-4 MJH/ID/MW  
ACCESSION NR: AR5012848 UR/0137/65/000/003/D029/D029

SOURCE: Ref. zh. Metallurgiya, Abs. 3D202

AUTHOR: Flyatskovskiy, O. A.; Yuferov, V. M.; Pavlovskiy, B. G.; Vorona, V. M.;  
Lezinskaya, Ye. Ya.

TITLE: Production of tubes from EP27 steel

CITED SOURCE: Sb. Proiz-vo trub. Vyp. 13. M., Metallurgiya, 1964, 5-8

TOPIC TAGS: metal tube, steel, temperature interval, hot rolling, billet,  
metal ductility, heat treatment, cold working/ EP27 steel

TRANSLATION: It has been established as the result of an investigation that the optimum temperature interval for the hot rolling of tubes of EP27 steel lies within the limits of 1150-1180°. In heating the tube shaped billets, it is necessary to take into account the heating up of the metal in the broaching operation. Hot rolled tubes of EP27 steel have a sufficient reserve of ductility for further cold working without special heat treatment. The intermediate and final heat treatment of EP27 steel tubes should be carried out by heating them to 1050-1100° with a holding time at this temperature depending on their wall thickness, and by

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ACCESSION NR: AR5012848

subsequent cooling in air. N. Yudina.

SUB CODE: MM

ENCL: 00

Card 2/2

ACCESSION NR: AP5002974

S/0133/65/000/001/0049/0052

AUTHOR: Plyatskovskiy, O. A. (Doctor of technical sciences); Yuferov, V. M. (Candi-  
date of technical sciences); Pavlovskiy, N. N. (Engineer); Tarona, V. M. (Engineer);  
Kuznetsov, Ye. Ya. (Engineer); Kovsina, A. M. (Engineer); Kuznetsovskaya, E. I.  
Korotkiy, V. B. (Engineer); Lukatskiy, V. N. (Engineer)

TITLE: Mastering the production of IKh15N9S3B steel pipe

SOURCE: Stal', no. 1, 1965, 49-52

TOPIC TAGS: steel pipe, pipe rolling, austenite steel, martensite steel, stainless  
steel, stainless steel pipe, steel phase transformation / steel IKh15N9S3B

ABSTRACT: Phase transformations of austenite into martensite in IKh15N9S3B stain-  
less steel during cold deformation has been taken into consideration in developing  
the technology of hot-and cold-rolled pipes. The martensite point  $M_s$  for the de-  
formation of this steel lies around 150C and the range of reversal from martensite  
to austenite is between 500 and 700C. Mass production of thinwalled IKh15N9S3B  
steel pipe is quite possible if the raw material is free of nonmetallic impurities  
(nitrides and carbonitrides). The above steel type (=EP302) differs from IKh15N10T  
by having a 3% lower Cr content substituted by 3% Si. It shows interesting proper-

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ACCESSION NR: AP5002974

ties: thus, its ductility changes during hot deformation and the breakdown of unstable austenite into martensite takes place during cold deformation. Tests on the hot rolling of forged 90 mm diameter billets are described in great detail. Great accumulations of nitrides were observed. Cut-out samples were subjected to tensile strength tests at various temperatures and the content of the ferro-magnetic alpha-phase was determined. On the basis of these tests, the following procedure was recommended: first passes of cold rolling are to be done at 150C. Ready pipes are heat treated at 1050-1100C. This steel has a tendency to be hardened considerably by cold working but heat treatment later removes this hardness nearly completely. Despite martensite formation, cold rolling was satisfactory up to 60% deformation. Hot rolling was also satisfactory except for cracks where there was considerable accumulation of nitride impurities. G. N. Savitskiy and B. N. Kuznetsov participated in the work. (izv. vuzov, 1965, No. 1, p. 10)

UNITED STATES GOVERNMENT PRINTING OFFICE: 1965 O 480-000

FORM NO. 101 (REV. 11-15-64)

REF SOV: 000

OTHER: 000

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(N) L 10891-66 EWT(m)/EWA(d)/EWP(t)/EWP(k)/EWP(z)/EWP(b)/EWA(c) MJW/JD/HW

ACC NR: AP6000607

SOURCE CODE: UR/0129/65/000/012/0027/0030

AUTHOR: Yuferov, V. M.; Chemerinskaya, R. I.; Lezinskaya, Ye. Ya.; Vovsina, A. D.;  
Karpenko, V. P. 44,55 44,55 44,55 44,55

ORG: UkrNITI 44,55 62 61

TITLE: Deformation-induced martensitic transformation in lKh15N9S3B steel B

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 12, 1965, 27-30

TOPIC TAGS: steel, austenitic steel, stainless steel, steel tube, tube rolling, cold rolling, warm rolling, steel austenite, austenite transformation, martensitic transformation/lKh15N9S3B steel

ABSTRACT: Cold rolling of lKh15N9S3B<sup>A</sup> steel tubes presents serious difficulties owing to the formation of large amounts (60—70%) of martensite. This martensite appears to be the only cause of difficulties since it has been proved experimentally that the steel in fully austenitic condition is not age-hardenable. Tensile tests at 20 to 500C showed that deformation at temperatures below 150C promotes martensitic transformation. The maximum amount of martensite (40—57%) forms with deformation at 20C. Additional annealing at 850C (after annealing at 1100C) intensifies the martensite formation. Annealing of cold-rolled tubes at 450—700C brings about a reversed alpha-to-gamma transformation, but in following cold working, the austenite transforms back into martensite. Examination of a tube section taken from a stopped

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L 10891-66

ACC NR: AP6000607

cold-rolling mill showed that as the reduction increases from 0 to 38%, the amount of martensite increases from 0.3 to 38% and the hardness, from 235 to 388 H<sub>B</sub>. At this point, apparently, the temperature of the metal becomes higher than 150C, and no more martensite is formed with a further increase in reduction to 45%. On the basis of the above experiments, "warm" rolling is recommended for 1Kh15N9S3B steel tubes; either the tubes should be preheated to 300-350C before entering the cold-rolling mill, or the mill rolls should be preheated. The rolling should be done without a coolant. Orig. art. has: 4 figures. [DV]

SUB CODE: 11, 13/ SUBM DATE: none/ ATD PRESS: 4172

HW  
Card 2/2

LEZINSKIY, Mikhail Leonidovich; TARAN, G., red.; ISUPOVA, N., tekhn.  
red.

[They turn the lights on; from a worker's dairy] Oni zazhi-  
gaiut ogni; iz dnevnika rabocheho. Simferopol', Krymizdat,  
1962. 138 p. (MIRA 15:9)  
(Sevastopol--Electricians)

15.8110

1209, 1372, 1407

21282

G/004/61/008/004/001/003  
B120/B206

AUTHORS:

Leziva, J. M., Lidařík, M., and Starý, S.

TITLE:

Effect of structure of various polyphenols on the properties of epoxy resins

PERIODICAL:

Plaste und Kautschuk, v. 8, no. 4, 1961, 171-174

TEXT: The effect of structure of the phenolic component on the properties of epoxy resins of medium molecular weight was studied. Preparation of the phenolic component: The bisphenols (2)-(9) in Table 1 were prepared by condensation of the corresponding ketone and aldehyde, respectively, with phenol or o-cresol at a molar ratio 1:1.78 in the presence of 72.5% H<sub>2</sub>SO<sub>4</sub> and a small amount of toluene and thioglycolic acid at 40°C; (12) by melting 62 g of 2-methyl-4-tert-butyl-6-methylol phenol with 105 g of 2-methyl-4-tert-butyl phenol, addition of 5 g of HCl concentrate at 90°C, heating to 120°C for one hour, distilling off in vacuum of the nonreacted 2-methyl-4-tert-butyl phenol, rinsing of the residue with petroleum ether, and recrystallizing from gasoline; (13) by melting 42 g of 4-tert-butyl-2,6-dimethyl phenol with 280 g of 4-tert-butyl phenol, addition of 7 ml of HCl concentrate, slow  
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Effect of structure ...

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solidifying under stirring and cooling, distilling off the nonreacted 4-tert-butyl phenol through water vapor distillation, and double recrystallizing of the residue from ethanol. Preparation of epoxy resins: To a mixture of 1 mole of bisphenol, 1.33 moles of epichlorohydrin and dioxane (30%, related to bisphenol), 1.40 moles of NaOH (in 30% solution) was added dropwise at 70°C in the course of 2 hr, then kept for 2 hr at 75°C, and then the mixture butanol - xylene (1:3) was added in the same proportion by weight as the original bisphenol. In the bisphenols (2) and (11) (see Table 1) dioxane had to be used as solvent, in (1) the part insoluble in butanol - xylene was dissolved by addition of dioxane. Two layers formed which were separated, the resin solution was cooled, neutralized with CO<sub>2</sub>, dehydrated by azeotropic distillation, filtered, and the solvent was finally removed at 170°C in vacuum. The resins from bisphenols (6) and (10) were dried by means of silica gel. Properties of epoxy resins as dependent on the structure of the phenolic component: see Table 2. Explanations: Column 9: the cementing was hardened at 180°C for 2 hr, and the properties were rated according to Lidarik, M., Plaste und Kautschuk, v. 7 (1960), p. 55. Column 12: test of the produced epoxy resins for their suitability as stoving lacquers. These were produced according to Swiss patent 257115 of the Ciba AG (August 30,

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Effect of structure ...

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1948). Stoving lacquers made from the very easily accessible 2,2-bis(4-hydroxy-3-methyl-phenyl)-propane of good yield show unsatisfactory properties, even after combination with a resin from dimerized fatty acids and triethylene amine. Casting resins from 2,2-bis(4-hydroxy-3-methyl-phenyl)-propane, hardened with phthalic anhydride, show insufficient strength properties as compared with those from 2,2-bis(4-hydroxy-phenyl)-propane (the values of resins made from 2,2-bis(4-hydroxy-phenyl)-propane are in parentheses): tensile strength 147 (460-510) kg/cm<sup>2</sup>, flexural strength 541 (700-810) kg/cm<sup>2</sup>, impact flexural strength 5 (16-24) kg/cm<sup>2</sup>; the resistance to heat according to Vicat is about equal: 116(115)<sup>o</sup>C; the electric insulation properties are inferior: dielectric constant 4.58(3.66), loss factor at 800 cycles, 0.069(0.0011), resistivity 10<sup>15</sup>(10<sup>16</sup>)Ω·cm. Table 3 shows the measured values for the deformation test according to Höppler after hardening the resins with phthalic anhydride (one molecule for 2 epoxy groups). Preparation of test pieces: the resin was heated to 120<sup>o</sup>C, the phthalic anhydride was stirred in for 10-15 min, the mass was then poured into the mold, and the test pieces (cylinder: 11.5 cm diameter, 8 cm height) were dried at 120<sup>o</sup>C for 17 hr. Conclusions: The epoxy resin properties strongly depend on the structure of the initial polyphenols. 2,2-bis(4-hydroxy-phenyl)-propane produces resins of universal applicability. Resins of special properties  
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Effect of structure ...

G/004/61/008/004/001/003  
B120/B206

can be produced by using other polyphenols. There are 6 tables and 25 references: 3 Soviet-bloc and 22 non-Soviet-bloc. The three most recent references to English-language publications read as follows: W. Erich and M. J. Bedmar, Appl. Polymer Sci., v. 3(1960), p. 296. O. Stephenson, Soc. v.1954, p. 1571. W. E. Clair, Brit. P. 799629 (February 4, 1957), Union Carbide Corp., Swiss. P. 341002 (April 2, 1955).

ASSOCIATION: Forschungsinstitut für synthetische Harze und Lacke, Pardubice (ČSSR)(Research Institute of Synthetic Resins and Lacquers, Pardubice, Czechoslovakia)

Legends to the Tables: Table 1: (a) raw materials used, (b) melting point, °C, (c) determined, (d) according to publications, (e) trinuclear novolak from p-tert-butyl phenol. Table 2: Properties of produced epoxy resins: (1) polyphenol, (2) analysis, (3) content of epoxy groups, (4) chlorine content, (5) melting point, (6) solubility in (7) toluene, (8) mineral spirit, (9) properties of the glue with dicyano diamide, (10) tensile shearing strength, (11) resistance to heat according to Vicat, (12) lacquer film properties (hardened for 60 min at 180°C), (13) on glass, (14) on sheet steel, (15) hardness, measured by pendulum tester according to Persoz, (16) aspect: (17) thickness of layer, (18) flexibility test according to Erichsen, (19) Card 4/8



LEZNER, S.B.

"Changes in the Morphological and Chemical Composition of the Blood of Patients With Semiarthritic Rheumatism Under the Influence of an Ultrahigh-Frequency Electric Field." Cand Med Sci, Leningrad Sanitary-Hygiene Medical Inst, Leningrad, 1954. (RZhBiolKhim No 8, Apr 55 )

SO: Sum.No. 704, 2 Nov 55 - Survey of Scientific and Technical Dissertations Defneded at USSR Higher Educational Institutions (16).

KIRSANOV, Yu.V.; LEZNER, T.A. (Ivano-Frankovsk)

Case of pulmonary rupture without external lesions of the chest.  
Vest. rent. i rad. 40 no.3:58-59 My-Je '65.

(MIRA 18:7)

KERSANOV, Yu.V.; LEVNER, T.A.

Two cases of tumors of the ribs detected during thoracic  
fluorography. Vest. rent. i rad. 38 no.6:63 N-D '65.

(MIRA 17:6)

LEZNICKI, Andrzej, mgr inż.

Investigation of sewage from a seashore recreation center.  
Gosp wodna 23 no. 10:380-382 0 '63.

1. Department of Soil Improvement, Technical University,  
Szczecin.

LEZNICKI, Andrzej, mgr inz.

Study on an unequal effluent of sewage from a coastal summer resort. Gaz woda techn sanit 37 no.8:254-257 Ag '63.

1. Technical University, Szczecin.

LEZNICKI, Andrzej, dr inż.

Influence of the twenty-four hour decomposition of sewages on the size of the conservation storage reservoir. Gosp wodna 24 no. 6:206-207 Je '64.

1. Department of Soil Improvement, Technical University, Szczecin.

CA *Handwritten notes*

12

Determination of the calorie content of food from its dry residue. A. I. Leznik. *Gigiena i Sanit.* 1951, No. 8, M. 2.  
— Calcn. of the calorie content according to Sergeev (*ibid.* 1947, No. 8) was checked for 80 foods. The least discrepancies (1-8%) were found in foods devoid of fat and salt. Since in the S. method fats are not taken into account, deviations up to 13% are found in fatty foods.  
G. M. Kosolapoff

LEZNIK, A. I.

LEZNIK, A.I.

Bacteriological index of the quality of cooked sausage products.  
Vop. pit. 13 no.4:33-34 J1-Au '54. (MLRA 7:7)

1. Iz sanitarno-epidemiologicheskoy stantsii Makeyevki.  
(BACTERIA,  
\*in sausages)  
(FOOD,  
\*sausages, bacteriol.)



LEZNIK, A.I.

Mineral composition of food for students of vocational schools.  
Vop.pit. 14 no.2:49 Mr-Ap '55. (MLRA 8:6)

1. Iz pishchevogo otdela sanitarno-epidemiologicheskoy stantsii,  
Makeyevka.

(FOOD,

mineral content for students of vocational schools)

(SCHOOLS,

vocational, mineral content of food for students)

LEZNIK, A. I.

Bacteriological tests for quality of sausages. Vop.pit. 14  
no.6:41-42 N-D '55. (MLRA 9:1)

1. Iz sanitarno-epidemiologicheskey stantsii Makeyevki.  
(SAUSAGES) (FOOD BACTERIOLOGY)

LEZNIK, A.I.

Bacteriological indexes of the quality of blended milk products  
for children. Vop.pit. 14 no.6:42 N-D '55. (MLRA 9:1)

1. Iz sanitarno-epidemiologicheskey statusii Makeyevki.  
(FOOD--BACTERIOLOGY) (DAIRY PRODUCTS--ANALYSIS AND EXAMINATION)

LEZNIK, A.I.

Bacteriological indicators of the quality of ice cream. Yop.pit.  
15 no.2:57 Mr-Ap '56. (MIRA 9:7)

1. Is sanitarno-epidemiologicheskoy stantsii Makeyevki  
(ICE CREAM, ICES, ETC.)

LEZNIK, A.I.

"Hygiene of public catering enterprises" by V.P.Prokof'ev. Reviewed  
by A.I.Leznik. Vop.pit. 16 no.5:93-94 S-O '57. (MIRA 11:3)  
(RESTAURANTS, LUNCHROOMS, ETC. - SANITATION)  
(PROKOF'EV, V.P.)

LEZNIK, A.I., sanitarnyy vrach

Concerning the article on "Problems requiring solution." Gig. i san.  
22 no.1:83-84 Ja '57. (MIRA 10;2)

1. Iz gorodskoy sanitarno-epidemiologicheskoy stantsii Makeyevki.  
(PUBLIC HEALTH)

~~LEZNIK, A.I.~~

Hygienic characteristics of culinary products from chopped meat.  
Vopit. 17 no.5:77-79 S-0 '58 (MIRA 11:10)

1. Iz gorodskoy sanitarnoy-epidemiologicheskoy stantsii (glavnyy vrach A.V. Mnukhina), Makeyevka.

(MEAT

hyg. aspects of food products made from chopped  
meat (Rus))

(FOOD,

same (Rus))

LEZNIK, A.I.

Some aspects of the prevention of enteric infections; examination of bacterial carriers. Zhur.mikrobiol.epid. i immun. 29 no.4:94-97 Ap '58. (MIRA 11:4)

1. Iz Gorodskoy sanitarno-epidemiologicheskoy stantsii Makeyevki.  
(DYSENTERY, BACILLARY, transmission, carriage, control (Rus)  
(TYPHOID FEVER, transm. same)  
(PARATYPHOID FEVERS, transm. same)



LEZNIK, A.

Sanitation control. Mias. ind. SSSR 29 no.6:35 '58. (MIRA 11:12)

1. Makeyevskaya gorodskaya sanitarno-epidemiologicheskaya stantsiya.  
(Packing houses--Sanitation)

LEZNIK, A.I. (Makeyevka)

Amount of some mineral salts in the diet of tuberculus patients  
and ways of enriching it. Vrach.delo no.2:195 F '59.

(MIRA 12:6)

1. Gorodskaya sanitarno-epidemiologicheskaya stantsiya.  
(MINERALS IN FOOD) (DIET IN DISEASE) (TUBERCULOSIS)

LEZNIK, A.I.

Controlling the quality of hamburger products. Vop. pit. 18 no.3:  
95-96 My-Je '59. (MIRA 12:7)

1. Iz sanitarno-epidemiologicheskoy stantsii (glavnyy vrach A.V.  
Mnukhina) g. Makeyevki.  
(MEAT INSPECTION)

LEZNIK, A.I.

On M.A. Kheifets' article "Control of cleanliness of equipment in food plants." Gig. i san. 24 no.2:72 F '59. (MIRA 12:3)

1. Iz Makeyevskoy gorodskoy sanitarno-epidemiologicheskoy stantsii.  
(FOOD HANDLING) (KHEIFETS, M.A.)

LEZNIK, A.I. (Makeyevka)

Principles for sanitary and bacteriological standardization and  
research in the field of nutritional hygiene. Vop. pit. 20  
no. 1:90-91 Ja-F '61. (MIRA 14:2)  
(FOOD ADULTERATION AND INSPECTION)

22890

S, 109/61/006/004/004/025  
E140/E163

6,9440

AUTHOR: Lezin, Yu.S.

TITLE: The influence of accumulator parameters on their operating efficiency

PERIODICAL: Radiotekhnika i elektronika, Vol.6, No.4, 1961, pp. 529-535

TEXT: The author continues his investigation of comb filters (see Ref.2: Radiotekhnika i elektronika, 1961, Vol.6, No.2, 187). The effectiveness of such accumulators can be judged on the basis of the improvement in signal/noise ratio. The comb filters are characterised by the author by the following two parameters: bandwidth  $\Delta F$  and feedback factor  $m$ . The improvement in signal/noise ratio as a function of these parameters is calculated for rectangular pulses in normal white noise. It is found that optimal values for the filter parameters exist. The optimal value of bandwidth increases sharply as the feedback factor approaches unity, and is not very critical for a single accumulator. Compared with an optimal filter, a comb filter with  $m = 0.9$  gives gains of 3.5, 9.56 and 12.5 for one, two and three accumulators in series, Card 1/2

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S/109/61/006/004/004/025  
E140/E163

The influence of accumulator parameters on their operating efficiency

respectively. While the use of the second accumulator gives an improvement of a factor of 2.5, a third accumulator gives only an additional 30%. The author therefore concludes that in view of other complicating considerations, two filters in series are useful, but not three. There are 7 figures and 4 references: 3 Soviet and 1 English.

SUBMITTED: March 28, 1960 (initially)  
September 30, 1960 (after revision)

Card 2/2

DMITRIYEVA, R. [translator]; LEZINOVA, N. [translator]; SHPRINK, V.  
[translator]; TSYRLIN, L.M., red.; SEMENOVA, N.Kh., red.;  
PYATAKOVA, N.D., tekhn.red.

[Agricultural statistics in capitalist countries] Statistika  
sel'skogo khoziaistva v kapitalisticheskikh stranakh; sbornik  
statei. Moskva, Gosstatizdat TsSU SSSR, 1960. 226 p.  
(MIRA 14:1)

(Agriculture--Statistics)



PETRZHIK, G.G.; DAVYDOVA, Ye.Ya.; LEZNEVA, L.V.

Pigment dyeing of textile fabrics. Tekst.prom. 21 no.3:44-45  
Mr '61. (MIRA 14:3)  
(Textile fabrics) (Dyes and dyeing)

LEZNOV, A.N.; KIRZHNIITS, D.A.

Field theory with nonlocal interaction. Part 4. Problems of convergence, causality, and gauge invariance. Zhur. eksp. i teor. fiz. 48 no.2:622-631 F '65. (MIRA 18:11)

1. Fizicheskiy institut imeni P.N. Lebedeva AN SSSR.

L 8810-66 EWT(1) IJP(c) GG

ACC NR: AP5024699

SOURCE CODE: UR/0056/65/049/003/0784/0786

AUTHOR: <sup>44,55</sup> Leznov, A. N.

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<sub>B</sub>

TITLE: On the macrocausality condition in nonlocal field theory

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 3, 1965, 784-786

TOPIC TAGS: <sup>21,44,55</sup> quantum field theory, group theory, spectral distribution, scattering matrix

ABSTRACT: It is shown that the well-known result of E. C. G. Stueckelberg and G. Wanders (Helv. Phys. Acta v. 27, 667, 1954) on the incompatibility of macrocausality, which consists in the requirement that the interaction over macroscopic time intervals be mediated by quanta with positive energy, with unitarity in nonlocal field theory is due to an unfavorable choice of the anti-hermitian part of the vertex graph. It is shown by transforming the appropriate integral that the macrocausality condition is actually satisfied formally in a whole class of nonlocal theories for which the reduction formula of Lehmann, Symanzik, and Zimmermann is applicable. Author is grateful to D. A. Kirzhnits for continuous interest and numerous discussions. Orig. art. has: 5 formulas. <sup>44.55</sup>

SUB CODE: 20/

SUBM DATE: 16Jan65/

ORIG REF: 001/

OTH REF: 003

jw

Cord 1/1

LEZNOV, B.S., inzh.

Regulation of pumping units using electromagnetic couplings.  
Vod. i san. tekhn. no.1:15-19 Ja '62. (MIRA 15:6)  
(Centrifugal pumps) (Couplings)