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AUTHORITY

LOC/ATD ltr dtd 2 Dec 1965

S/102/62/000/005/003/003
D201/D308

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AUTHORS: Kuntsevych, V.M. and Chuhunnaya, L.I.

TITLE: A difference-type extremal sampled-data regulator

PERIODICAL: Avtomatyka, no. 5, 1962, 49-52

TEXT: The authors discuss the design of a regulator utilizing pulse width modulation which realizes the following law of control:

$$\left.\begin{aligned} u &= \operatorname{sign}(\Delta\varphi_{n-1} + a_M)(-1)^n \quad \text{for } nT \leq t \leq nt + \Delta t_n \\ u &= 0 \quad \text{for } nT + \Delta t_n < t < (n+1)T \end{aligned}\right\} \quad (6a)$$

$$\Delta t_n = f(|\Delta\varphi_{n-1} + a_M|) = \tau \ln \frac{|\Delta\varphi_n + a_M|}{\delta}, \quad (6b)$$

where τ is the time constant of the exponential dealy of the input voltages, δ - the operating voltage of triggers, T = constant = the repetition period. The principle of obtaining pulse width modulation consists of periodic sampling of the exponentially decay-

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ing input voltage, so that the pulse duration at the output of the switch is related logarithmically to the input voltage amplitude. The polarity of the command voltage u_n is determined by a logic system of 'or' and 'and' circuits, the operating time t_n - by the operation of trigger circuits. The regulator is able to cope with a shift of the operating point of the system with respect to the extremum. Technical data of the regulator are given together with graphs of switching time Δt of the motor against the magnitude of the input voltage with the time constant τ as a parameter. There are 5 figures.

SUBMITTED: May 6, 1962

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