NEW LIMITATION CHANGE

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

\[ u = \text{sign} (\Delta \varphi_{n-1} + a_M)(-1)^n \quad \text{for} \ nT < t < nt + \Delta t_n \] (6a)

\[ u = 0 \quad \text{for} \ nt + \Delta t_n < t < (n+1)T \]

\[ \Delta t_n = f(\Delta \varphi_{n-1} + a_M) = \tau \ln \left| \frac{\Delta \varphi_{n-1} + a_M}{\delta} \right| \] (6b)

where \( \tau \) is the time constant of the exponential delay of the input voltages, \( \delta \) - the operating voltage of triggers, \( T \) - constant is the repetition period. The principle of obtaining pulse width modulation consists of periodic sampling of the exponentially decaying 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 \( \Delta t \) of the motor against the magnitude of the input voltage with the time constant \( \tau \) as a parameter. There are 5 figures.

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