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## **FUZZY CONTROL OF THE ELECTRIC DRIVE OF CUTTING FORCE STABILIZATION LOOP IN PRESENCE OF OSCILLATION CHARACTER DISTURBANCES**

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### **Abstract**

*The article deals with a problem of designing a fuzzy regulator for the stabilizing system of cutting force tangential component, which makes possible to increase the productivity of equipment and the reliability of machine tools. The structure of the fuzzy controller with the input signal of the set value of the cutting force stabilizing component on the basis of the analysis of the structure of fuzzy regulators using different methods of derivation of the output signal is developed. In order to take into account, the effect of allowance changing during the work piece processing of the, it is proposed to use oscillation link at whose input the sequence of impulse functions arrives. Investigation of the dynamic characteristics of the force stabilization system using the MATLAB application package, taking into account the harmonic oscillations of the allowance and the nonlinear dependence of the cutting force on the feed, is performed. The analysis of the obtained transients of cutting force tangential component is carried out. The possibility of practical implementation of the system of cutting force stabilization*

in the modern machines with semiconductor converters and microprocessor control unit is shown. References 10, figures 6, table 1.

**Key words:** cutting force stabilization system, fuzzy regulator, harmonious behavior of disturbances, inertia of the cutting process, modeling.

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