

Genetic Algorithm Based Method of Elimination of Residual Oscillation in Mechatronic Systems

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Abstract: The paper presents control signals generation methods, preventing the excitation of residual vibration in slightly damped oscillational systems. It is focused on the feedforward methods, as most of the vibrations in examined processes are induced by the control, while the influence of disturbances is mostly negligible. Application of these methods involves ensuring of the insensitivity to natural frequency change, which can be reached in classical approach only by considerable increase of transient response duration. Genetic algorithms can be effectively applied for the numerical optimization of developed shaper while maintaining the insensitivity to parameter change and short time delay.

Keywords: elimination of residual vibration; input signal shaping; genetic algorithm;

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