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Designing of a Micromechanical Gyroscope with Enhanced Bandwidth

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Abstract : The aim of the research was to develop a design of micromechanical gyroscope, which will be used in the automotive industry, safety systems and anti-lock braking system. The research resulted in improvement of one of the technical parameters – bandwidth. In the process of mass production of micromechanical sensors, problems occurred with their use. One of the problems was a narrow bandwidth typical for the gyroscopes with a high-quality factor. A constructive way of increasing bandwidth is to use multimass systems via secondary oscillations axis. When constructing, the main task was to choose the frequency - phases and antiphases as close to each other as possible, and set the frequency of the primary oscillation evenly between them. Investigations are carried out using the T-Flex CAD finite element program and T-Flex ANALYSIS support package. The results obtained are planned to use in the future for the production of an experimental model of development and testing in practice of characteristics derived by theoretical means.

Keywords : bandwidth, inertial mass, mathematical model, micromechanical gyroscope, micromechanics
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