

# “Design and Analysis of MEMS Gyroscopes”

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The unprecedented success of inertial sensors in portable electronics, and in particular wireless devices, has made micromechanical gyroscopes the fastest growing sector in the MEMS market. The demand for sensors that are accurate enough to implement pedestrian navigation systems (PNS), capable of operating in the absence of GPS, has accelerated the need for improvements in performance, power consumption and miniaturization. Moreover, application spaces such as automotive and military require enhancements in the robustness and reliability of existing designs.

In this tutorial, the operation principles of MEMS gyroscopes will be presented; different types and operation methods of vibratory rotation-rate sensors will be covered. Emphasis will be placed on the implementation techniques and advantages of mode-matched devices. New trends on the development of single-die inertial sensors will be covered, including details on the design of high frequency bulk-acoustic wave (BAW) gyroscopes.



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