

# Design and Analysis of MEMS Gyroscope

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## Abstract

MEMS gyroscope technology provides cost-effective method for improving directional estimation and overall accuracy in the navigation systems. This paper presents a tuning-fork gyroscope (TFG) [1] with a perforated proof mass. The perforated proof mass used in the design enables the reduction of the damping effect. This MEMS based gyroscope was designed using COMSOL Multiphysics 4.2a. This gyroscope has two modes- drive mode and sense mode. The driving force is given in the x-direction and the displacement due to the Coriolis Effect is sensed in the y-direction. The device is driven at its natural frequency and the response of the device is analyzed at static and dynamic state. The TFG produced a displacement of  $2.6 \times 10^{-9}$  m. The frequency range applied is 0.027 - 0.24 MHz.

## Reference

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