عنوان مقاله:

Fuzzy Automatic Gain Controller for Drive Mode of MEMS Gyroscope

محل انتشار:

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نویسندگان:

Meghhad Mohammadi - *Department of Marine Electrical and Communication Engineering Khorramshahr University of Marine Science and TechnologyKhorramshahr, Iran*

Hooman Kaabi - *Department of Electrical Engineering Shahid Chamran University of Ahvaz Ahvaz, Iran*

Karim Ansari Asl - *Department of Electrical Engineering Shahid Chamran University of Ahvaz Ahvaz, Iran*

خلاصه مقاله:

This paper investigates the performance of drivemode controller on the MEMS vibratory gyroscope. Thecontrollers are designed to regulate and stabilize the vibrationamplitude of the drive mode with an assumption that theexcitation signal frequency and the natural frequency of the drivemode are constant. At first, the effect of a linear PI controller isstudied on nonlinear model of MEMS gyroscope. Once again, theimpact of nonlinear controller on the control of the drive modeamplitude is examined. For this purpose, two methods ofnonlinear hyperbolic tangent function and fuzzy logic controllerare used. In all processes of controller design, genetics algorithmis employed to calculate optimum coefficient in order to reducesettling time. Comparisons of simulation results show that fuzzycontroller has the shortest .settling time and the amplitude of thedrive mode has no overshoot

کلمات کلیدی:

Drive mode control; Fuzzy control; MEMS Gyroscopes; Nonlinear systems; Coriolis force