

Development and performance measurement of position sensors for seismic isolation systems of ETpathfinder prototype GW detector

Linear Variable Differential Transformers(LVDTs) are the standard, precise, non contact position sensors used in VIRGO and KHAGRA suspension systems which are UHV compatible. The main working principle of this sensor is conversion of linear displacement into an electrical signal through mutual induction. This can be combined with voice coil actuators. Due to their extreme importance in seismic attenuation systems in GW detectors, modelling followed by simulation to achieve the optimal performance is crucial. The goal of the poster presentation is to demonstrate my work on modelling of LVDT designs (used in ETPF) to improve the sensitivity of the sensor. Python interface to finite element methods, pyFEMM, is used. Simulation results for 6 designs will be discussed with the improvements in the linearity and response.

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