ID: Type: **Poster**

Design, Simulation and Manufacturing a Seismic Geophone in Iran

For the years, seismic geophone production technology has monopolized to industrial countries and developing countries were less engaged in this field. Recent scientific researches and extending of exploration seismology in developing countries has persuade them to work on this important filed of instrumental seismology as a base of safe and low cost instrument production.

As our case, we have taken great steps towards advance sensor technology and this paper presents manufacturing and analysis of a novel, absolute velocity geophone. Main geophone parameters; resonant frequency, magnetic flux of permanent magnet, and physical dimensions, were considered as inputs and spring dimensions, spring stiffness, spurious frequency and the generator constant are obtained as outputs.

Applying professional ANSYS analysis; effects of variation in proof mass, spring design, and damping constant of coils on frequency response to step and random vibration are studied.

Static stress analysis of springs in horizontal and vertical directions are calculated and results were used optimizing output parameters. A geophone with frequency of 10Hz and proof mass of 10gr is designed which its distinctive characteristic is having high spurious frequency of 460 Hz in comparison with existing types. Finally the theoretical and simulations are compared to the real experimental data.

Primary author: AHMADIAN, Hossein (GeoPersian Company)

Presenter: AHMADIAN, Hossein (GeoPersian Company)

Track Classification: Theme 3: Advances in Sensors, Networks and Processing