



SEISMOMETER INSTALLATION AND FIELD CONDITIONS EFFECTS ON OBSERVED ELLIPTICITY CURVE

Author(s): **Shaham Atashband, Mehran Esfahanizadeh**

Volume: **Thematic Issue on Earthquakes**

Pages: **21-34**

Date: **October 2012**

Abstract:

Nowadays, in ambient vibration category, single station method has shown precious results for estimating subsurface characters as well as its economic advantages. In a horizontal/vertical (H/V) time frequency analysis (HVTFA) procedure, derivation of an ellipticity curve is a vital step. On the other hand, some field obstacles in seismometer installation conditions (e.g on jagged surfaces, pavements, steel platforms, etc.) might have some effects on the accuracy of the derived curve and causing presenting different results for an individual site; therefore, analysis (based on time-frequency analysis using continuous wavelet transform) on recorded data in various situations of seismometer installation (e.g on a layer of precast concrete, a pavement, a sand layer, a steel plate, combined, etc.) was performed in the presented study to compare derived ellipticity curves for an individual site. Moreover, classical H/V spectral ratio (HVSR) results (e.g derived fundamental frequencies) for the site were compared. As a result, thick artificial layers (e.g. the precast concrete and the pavement) showed distinct results for estimating ellipticity curve in comparison with other situations. Furthermore, a more reliable part of derived ellipticity curves (misfit is less than 5%) through frequency range f_0 to $2f_0$ (1.76–3.52Hz) was found; this needs some exploration for other sites.

For full paper, contact:

Prof Muhammad Masood Rafi

Editor, NED University Journal of Research

Ph: +92 (21) 99052413; Fax: +92 (21) 99261255

Email: NED-Journal@neduet.edu.pk

Website: <http://www.neduet.edu.pk/NED-Journal>