

for Estimating the Tripartite Array Back-Azimuth Error Caused by the Far-Field Approximation

Tuesday, 20 June 2023 15:00 (15 minutes)

In recent decades, the tripartite micro arrays (i.e. three-element array) became a major tool for the passive seismic phase of the on-site inspection, mainly due to their superior back azimuth estimation. However, the back azimuth is estimated under the assumption of far field approximation while tripartite arrays are used to monitor micro-seismicity and aftershocks in the vacancy of the array. Thus, in the region where the far field assumption might not hold. In this work, we determine the effect of breaking the far field assumption by analyzing the plane wave errors, i.e. the errors of the back azimuth and slowness computations caused by the plane wave assumption. Computational formulas for estimating the absolute errors, due to the plane wave assumption, were developed. A case study utilizing the subarrays of the IMS station MMAI, demonstrate that the plane wave errors are not the theoretical issues only but taking them into account can improve the results of field measurements.

E-mail

ybregm@gmail.com

Promotional text

We present a method for estimating the back-azimuth errors of tripartite arrays which is a major tool during the on-site inspection

Oral preference format

in-person

Primary authors: Dr BEN-HORIN, Yochai (NDC Israel); BREGMAN, Yuri (Israel NDC, Soreq Nuclear Research Center)

Presenter: Dr BEN-HORIN, Yochai (NDC Israel)

Session Classification: O3.3 On-site Inspection Techniques

Track Classification: Theme 3. Monitoring and On-Site Inspection Technologies and Techniques: T3.3 On-Site Inspection Techniques