

Improvement of Earthquake-parameter Estimation for Earthquake Early Warning

Shunta NODA Shunroku YAMAMOTO Shinji SATO

Earthquake parameters are rapidly estimated from single station data in the earthquake alarm system for Shinkansen. In this estimation, epicenter locations are estimated from the Principle Component Analysis (PCA) and the B - Δ method. In this paper, we propose new methods to improve the accuracy and rapidness of epicenter estimation by introducing variable time window, instead of the conventional fixed time window. By using these methods, it is found that estimation of back-azimuth by PCA is improved by about 30% and 0.25 seconds in accuracy and rapidness respectively, and estimation of epicentral distance by the B - Δ method can be improved by about 1.3 seconds in rapidness, compared with the conventional method.