Study on spectral decay characteristics in high frequency range using parameter κ- For crustal earthquakes -

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Spectral decay parameters κand f_E due to crustal earthquakes are estimated in this study. In high frequency range spectra of S-wave accelerations are generally characterized by a trend of exponential decay, $e^{-\pi f \kappa}$ ($f>f_E$), while they are modeled with f_{max} filter in Japanese applications. The κ's of the three large earthquakes are estimated in the range 0.0142 and 0.0277 and f_E's are estimated in the range 2Hz and 5Hz for the mainshocks of the 2003 Miyagi-ken Hokubu earthquake, the 2005 Fukuoka-Ken Seiho-oki earthquake, and the 2008 Iwate Miyagi Nairiku earthquake. The relationship between κand the power coefficient of f_{max} filter, s, and the relationship between f_E and f_{max} are evaluated from the results. Moreover, hypocentral distance dependency of κis confirmed as demonstrated by previous studies.

Keywords: Spectral decay characteristics, Kappa, fmax filter, Crustal earthquakes

