

Study on frequency and hypocentral distance dependent radiation coefficient

NAGASAKA, Yosuke^{1*} ; NOZU, Atsushi¹

¹Port and Airport Research Institute

Modeling radiation coefficient is important because radiation coefficient transits from theoretical to average value at the frequency range that is important for structures.

We have investigated the records of the 2000 Western Tottori Earthquake and modeled frequency and hypocentral distance dependent radiation coefficient. We modeled the radiation coefficient as a weighted average of the theoretical and average radiation coefficient and the weighting coefficient is modeled so that it depends on frequency and hypocentral distance. We propose a weighting coefficient α expressed as $\alpha = \exp(-\pi f r / Q_R V_S)$. This means that the radiation coefficient approaches to the average value as the number of waves between the hypocenter and a station increases. Q_R is a coefficient that determines the dependence on frequency and hypocentral distance.

In this study, we apply the model to smaller earthquakes in order to eliminate the effect of complex source process that prevents from setting one theoretical radiation coefficient for each station.

Keywords: radiation coefficient, strong ground motion simulation