

# Seismic tomography of the Moon

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In the past two decades, seismic tomography has become the most powerful tool to explore the heterogeneous structure of the Earth's interior. So far, many studies have been made on the interior structure of the Moon but just for 1-D velocity structure (e.g., Nakamura, 1983; Goins et al., 1981; Lognonnee et al., 2003; Khan and Mosegaard, 2002; Kuskov, 2002). However, the 3-D velocity structure of the lunar's interior has not been reported yet.

In this study, we attempted to apply a seismic tomography technique (Zhao, 2001) to 264 direct P wave data recorded at four stations (Apollo 12,14,15,16) from 92 moonquakes (Lognonnee et al., 2003; Nakamura, 2003) to obtain the 3-D velocity structure of the lunar's interior. Our results show that some low velocity anomalies appear in the upper mantle, while some high velocity anomalies exist in the lower mantle of the Moon. Some deep moonquakes occurred around the high velocity anomalies.