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**Rongrong Wang\*** ([rongwang@math.ubc.ca](mailto:rongwang@math.ubc.ca)), 1984 mathematics road, Vancouver, BC V6T1Z2, Canada. *Frequency extrapolation from band-limited data.*

Frequency extrapolation from band-limited data is an important problem in the field of exploration seismology. Due to physical constraints, the frequency range of seismic data are approximately 5Hz-180Hz depending on the specific setup of the survey. This band is often considered severely limiting in both the low and high frequency extent for the purposes of deducing large-scale structures as well as fine features of the underlying subterranean geology. In particular, the missing low frequencies from 0Hz to 5Hz are known to be extremely essential for an accurate inversion procedure. In this talk, we study possible approaches to solve the frequency extrapolation problem from mid-band data. In particular, we provide conditions as well as theoretical guarantees for an accurate spectrum reconstruction. The results are further supported by both stylized numerical experiments as well as a simulation for seismic inversion. (Received September 13, 2016)