Thermal conductivity of lower mantle minerals from *ab initio* anharmonic lattice dynamics

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Determination of lattice thermal conductivity (k) of lower mantle minerals is a key to understanding the dynamics of the Earth's interior. Although determination of k was impractical in the deep Earth P, T condition for a long time, recent experimental and computational developments have been extending the accessible P and T ranges [e.g. 1]. *Ab initio* prediction of k requires understanding of the phonon-phonon interaction associated with the lattice anharmonicity. We recently succeeded in developing an efficient method to calculate it based on the density-functional perturbation theory combined with anharmonic lattice dynamics theory, and applying to $MgSiO_3$ perovskite in the whole lower mantle P, T range for the first time. Next we extend our techniques to other lower mantle minerals such as $MgSiO_3$ post-perovskite, and now calculations of more realistic Fe-bearing systems are also started. In this presentation, we introduce the current situation of our research on k.

[1] H. Dekura, T. Tsuchiya and J. Tsuchiya (2013), Phys. Rev. Lett. **110**, 025904.