Abstract Submitted
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First principles elasticity of olivine[1] MARIBEL NÚÑEZVALDEZ, School of Physics and Astronomy, University of Minnesota, RENATA WENTZCOVITCH, Dept. of Chemical Engineering and Material Sciences, University of Minnesota, KOICHIRO UMEMOTO, Geology and Geophysics, University of Minnesota — We examine by first principles the static elaticity of olivine, $Mg_{2-x}Fe_xSiO_4$ ($x = 0.125$), a major constituent of the Earth's upper mantle. We investigate the effect of atomic arrangement and composition on single crystal and poly-crystalline elastic moduli. Wave propagation anisotropy in single crystals and polarization anisotropy in aggregates with preferred orientation are also investigated and compared with those of forsterite for a thorough understanding of the effect of iron on these properties.

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