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Studies of laser-driven isentropic compression of iron in the context of geophysics[1] S. MAZEVET, G. HUSER, F. OCCELLI, F. FESTA, CEA-DIF, France, E. BRAMBRINK, N. AMADOU, T. VINCI, A. DIZIERE, A. BENUZZI-MOUNAIX, M. KOENIG, LULI, Ecole Polytechnique, France, F. GUYOT, G. MORARD, IMPMC, Paris, France, K. MYANISHI, R. KODAMA, N. OZAKI, U. of Osaka, Japan, TH. DE RESSEGUIER, LCD, ENSMA, France —
The study of iron using dynamic compression paths yielding parameters different from that achieved on the principal Hugoniot might allow to access parameters relevant for the understanding of the solid-liquid phase transition in the Earth core (330 GPa, $\approx$ 5000 K). Beside the geophysical interest, dynamic compression allows to study the dynamics of the alpha-epsilon phase transition, as compression characteristic times are comparable with reaction kinetics. We have performed laser-driven ramp compression experiments on iron samples using the LULI laser facility. Different pressure ramp shapes and target samples will be presented. These results are also important to design future experiments using very large-scale facilities, which would allow to explore pressure-temperature conditions relevant to terrestrial-type exoplanets, which were recently discovered.

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