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Establishing Platinum as a shock compression standard to more than 2 TPa.

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Shock experiments to ever higher stress states allow to test numerical methods, physics theories, and uncover new unexpected behaviors of matter. However existing EOSs for standards are limited to about half a terapascal, and the problem with extrapolating to much higher pressures is that extrapolations come with significant uncertainties. We experimentally constrained the Pt standard up to > 2 TPa using shock compression on Sandia's Z machine. We also carried out AIMD simulations and we designed a broad range EOS for Pt: SESAME 3732. Our work establishes Platinum as a shock compression standard to > 2 TPa.

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