Abstract Submitted for the SHOCK19 Meeting of The American Physical Society

Planets and stars in the laboratory: the Z Fundamental Science Program THOMAS R. MATTSSON, MARCUS D. KNUDSON, Sandia National Laboratories — Over the last few years, our ability to drive matter to unprecedented pressure / temperature states has produced significant new insights across many fields. Sandias Z facility has unique capabilities to deliver high-precision data at extreme conditions. In this talk, we will describe the evolution of the Z Fundamental Science Program, give examples of recent discoveries made the in the areas of planetary science and astrophysics, and finally describe the future of the program and the next call for proposals. This work is supported by the Z Fundamental Science Program at Sandia National Laboratories. Sandia National Laboratories is a multimission laboratory managed and operated by National Technology Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energys National Nuclear Security Administration under contract DE-NA0003525.

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Date submitted: 28 Feb 2019

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