

Abstract Submitted
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Exploring the universe through Discovery Science on the National Ignition Facility (NIF)¹ BRUCE REMINGTON, Lawrence Livermore Natl Lab — Highlights from the NIF Discovery Science program will be presented. Examples include nuclear reactions relevant to stellar nucleosynthesis [1]; equations of state at high pressures relevant to planetary interiors [2, 3, 4] and white dwarf envelopes [5]; Rayleigh-Taylor instabilities relevant to supernovae and supernova remnant evolution [6, 7, 8]; relativistically hot plasmas [9] and target normal sheath acceleration of protons on NIF ARC [10]; magnetic reconnection at high energy densities [11]; and high velocity interpenetrating plasmas that generate collisionless astrophysical shocks, magnetic fields, and accelerate particles relevant to cosmic ray generation [12, 13]. [1] M. Gatu Johnson, PoP 24, 041407 (2017) [2] P.M. Celliers, Science 361, 677 (2018) [3] R.F. Smith, Nat. Astron. 2, 452 (2018) [4] T. Dppner, PRL 121, 025001 (2018) [5] A.L. Kritcher, Nature, in press (2020) [6] C.C. Kuranz, Nat. Com. 9, 1564 (2018) [7] J.P. Sauppe, PRL 124, 185003 (2020) [8] S. Palaniyappan, PoP 27, 047208 (2020) [9] G.J. Williams, PRE 101, 031201 (2020) [10] D. Mariscal, PoP 26, 043110 (2019) [11] W. Fox, PRL, submitted (2020) [12] F. Fiuza, Nat. Phys. in press (2020) [13] D.P. Higginson, PoP 26, 012113 (2019)

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