

Abstract Submitted
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Laboratory Astrophysics with High Power Lasers and 4th Generation Light Sources¹ GIANLUCA GREGORI², University of Oxford — The combination of high power optical lasers and free electron lasers operating at short wavelength (in the x-ray regime) has opened new avenues for laboratory astrophysics, where exotic states of matter can now be generated and probed with high accuracy. We will review a few examples of recent experiments performed at the Linac Coherent Light Source (LCLS) free electron laser operating in Stanford (CA), but also discuss future applications. We will focus our discussion on the following three examples: 1) Laboratory analogues of white dwarf envelopes and the physics of strongly coupled plasmas near crystallization; 2) scaled laboratory experiments to investigate magnetized and radiative shocks; and 3) possible proposals for testing strong gravity analogues using x-ray Thomson scattering.

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²Frontier HED science enabled by advanced light sources

Gianluca Gregori
University of Oxford

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