

Abstract Submitted  
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**Plasma lens focusing for multi-petawatt lasers**<sup>1</sup> JOHN PALASTRO, DANIEL GORDON, RICHARD HUBBARD, BAHMAN HAFIZI, MICHAEL HELLE, DMITRI KAGANOVICH, Naval Research Laboratory — A plasma lens provides the focusing power of a small f-number solid-state lens at a fraction of the diameter. These lenses offer flexibility to multi-petawatt (MPW) laser systems where the final focusing optic is likely a large, one-of-a-kind parabolic mirror that fixes the f-number for all experiments. Here, we examine plasma lenses for MPW systems using a combination of a computationally efficient, nonlinear thin-lens model that captures high-order optical aberrations and 3D PIC simulations. We identify parameters such as lens location and curvature, and plasma density that minimize aberrations and provide the highest focused intensity.

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