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Close Proximity Laser Beam Manipulation for HEDP Experiments with Plasma Mirrors* M. GEISSEL, M. SCHOLLMEIER, M. KIMMEL, P. RAMBO, J. SCHWARZ, B. ATHERTON, Sandia National Laboratories, E. BRAMBRINK, J. FUCHS, M. NAKATSUTSUMI, LULI / Ecole Polytechnique — Many high energy/high power lasers such as Z-Petawatt at Sandia National Laboratories utilize extremely heavy and sensitive optical assemblies for final focusing. Redirecting the beams is very difficult if not impossible, and setups also often require long focal lengths, which may compromise the pointing stability. We suggest that the application of plasma mirrors can be very useful for HEDP experiments with such systems, regardless of the contrast enhancing feature (e.g. using a high reflector as plasma mirror substrate). Applications of plasma mirrors can be deflection of the beam close to the target for more convenient experimental geometries or debris mitigation for the last large sized optics. In case of the more advanced concept of ellipsoidal geometries, plasma mirrors can even be used for f# translation, leading to focus intensity enhancement and improved pointing stability (if f# is reduced). This presentation will explain applications along with laser requirements and performance challenges. – *Sandia National Labs is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corp., for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

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