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Z-pinch Driven Fusion Capsules using the Hybrid Hohlraum Concept[1] STEPHEN SLUTZ, ROGER VESEY, Sandia National Laboratories — A new z-pinch approach to generate thermal x-rays suitable for driving inertial fusion capsules is presented. This hybrid hohlraum concept uses aspects of the two z pinch approaches to inertial fusion that are presently being studied. Similar to the dynamic hohlraum approach [S. A. Slutz et al., Phys. Plasmas, 10, 1875], a tungsten z pinch is imploded onto a multi-component convertor to efficiently obtain high radiation temperatures and an appropriate temporal pulse shape. The multi-component convertor is designed to generate primary and secondary vacuum hohlraums which are separated by baffles positioned to obtain adequate radiation symmetry around the capsule in a manner similar to the double ended hohlraum [R. A. Vesey et al., Phys. Plasmas, 10, 1854]. Numerical simulations indicate that high convergence capsule implosions driven by a hybrid hohlraum on ZR could yield deuterium/tritium densities in excess of 300 g/cc. Progress toward the design a hybrid hohlraum to drive inertial fusion capsules to ignition and high yield using future pulsed power machines is presented.

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