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Target designs for inertial confinement fusion using approximately 1 MJ of direct KrF laser light[1] JASON BATES, ANDREW SCHMITT, DAVID FYFE, STEVE OBENSCHAIN, STEVE ZALESAK, U.S. Naval Research Laboratory — We report on recent numerical simulations with the FAST radiation hydro-code of direct-drive target implosions. Our discussion focuses on both conventional and "shock-ignited"[2] target designs that utilize about 1 MJ of KrF laser light. Each class of designs has its own advantages, but it appears that shock-ignited targets may be superior in that gains of approximately 200 can be achieved with only 862 kJ of laser energy, according to one-dimensional simulations. This represents a significant improvement over the conventional "central-hot-spot" approach to laser fusion energy. In this presentation, we examine the two-dimensional stability of both types of targets by analyzing their performance in the presence of realistic inner- and outer-surface perturbations. Other important design issues, such as the susceptibility of the targets to laser-plasma instabilities and beam power misalignment, are also briefly addressed.

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[2]R. Betti, C.D. Zhou, K.S. Anderson, *et al.*, Phys. Rev. Lett. **98**, 155001 (2007).

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