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Advantages of a KrF laser driver to achieve robust fusion ignition and high yield[1] STEPHEN OBENSCHAIN, JASON BATES, MAX KARASIK, DAVID KEHNE, ANDREW SCHMITT, VICTOR SERLIN, JOHN SETHIAN, JAMES WEAVER, U.S. Naval Research Laboratory, FRANK HEGELER, Commonwealth Tech., JAECHUL OH, RSI, YEFIM AGLITSKIY, SAIC — The krypton-fluoride (KrF) laser has substantial target physics and technological advantages towards achieving robust direct-drive implosions that ignite and provide high gain. The potential physics advantages arise from its shorter wavelength (248nm), capability for more uniform target illumination, and broader bandwidth than existing frequency tripled glass lasers. These features can increase target performance and reduce the risk from both hydrodynamic and laser plasma instabilities. KrF's ISI beam smoothing technology allows easy implementation of focal diameter zooming that increases absorption efficiency and reduces risk from cross beam energy transfer. We will outline the current understanding of laser-target interactions with the KrF laser and present a phased path to a high-shot-rate high-performance inertial fusion facility that employs the KrF laser.

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