

A cohesive U.S. strategy to achieving Inertial Fusion Energy

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Inertial Fusion Energy (IFE) research is building on the repeated achievement of ignition at the National Ignition Facility and still requires significant advances to make IFE viable. Partnerships between national laboratories, universities, the private sector, and multiple U.S. government agencies is critical to build the desired ecosystem and accelerate IFE science and technology. Under the IFE-Science and Technology Accelerated Research (STAR) hubs¹, we are developing a common national IFE strategic plan that supports all major IFE approaches. In this talk, we will describe a multi-institution collaboration within this nascent ecosystem of innovation: the Science and Technology Accelerated Research for Fusion Innovation and Reactor Engineering² (STARFIRE) program. We will describe the several key technical areas investigated under STARFIRE and highlights from this past year. We will present additive manufacturing techniques used for foam-target printing, studies of possible IFE target design limitations, diode pumped solid state lasers architecture, system plant design tools and recent outreach efforts. Then, we will describe a plan guided by the IFE Hubs' milestones and the priority research opportunities identified by the 2022 IFE Basic Research Needs report. We will present an integrated national plan that will lay out the guideposts, milestones,

and nominal timeline for the key IFE technologies that pave the way toward a first IFE pilot plant on the decadal timescale.

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References

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