

The IFE-STAR RISE hub research efforts to advance inertial fusion

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The RISE hub is composed by a team of experts from the Colorado State University (lead), Stanford & SLAC National Accelerator Lab. (co-lead), University of Illinois, Cornell University, Texas A&M, Los Alamos National Lab., Naval Research Lab., Marvel Fusion, Xcimer Energy, and General Atomics dedicated to advance inertial fusion energy (IFE) science and technologies through multiple and complimentary efforts. RISE hub research focuses on performing: 1) theoretical design of multiple IFE concepts, 2) experiments and theory to advance technologies enabling laser fusion drivers, 3) IFE target development and engagement, and 4) experimental validation of fusion concepts. In addition, the hub's research offers a platform for workforce development and for engaging in university-industry-national laboratory partnerships.

The RISE hub supports advances in IFE approaches pursuing both krypton fluoride ($\lambda=248$ nm) and solid-state lasers drivers. Combined with innovative target concepts that exploit nano-structured and energy efficient target designs, these laser drivers will open up novel IFE regimes with ultrashort and high-energy temporally shaped nanosecond laser pulses and hybrid “hot spot “ ignition designs. This talk will describe the goals of the RISE hub and the research activities that are synergistically contributing to achieve scientific milestones, support industry and grow the much-needed diverse workforce in fusion energy.

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