PHYSICS AND ASTRONOMY COLLOQUIUM

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Ignition and the evolving landscape of fusion energy

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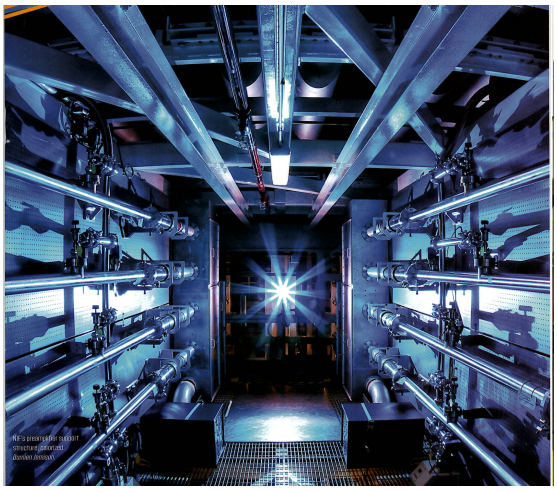
Serin Physics & Astronomy Building Room 330
Busch Campus, Rutgers University

With 192 laser beams delivering over 2 megajoules of energy to target, the National Ignition Facility (NIF) at Lawrence Livermore National Laboratory (LLNL) is the world's most energetic laser system and, for the first time in a controlled laboratory setting, has demonstrated target gain greater than 1. The NIF



generates ignition conditions by precisely firing the lasers onto a target comprising a centimeter-tall cylinder inside of which is a millimeter-scale spherical shell filled with deuterium-tritium fuel that implodes to compress and fuse. Compressing symmetrically and efficiently has required a series of scientific advances, including in target and laser pulse design. The generational achievement of ignition in the laboratory opens a new chapter for high energy density physics research as well as the pursuit of fusion energy, but critical issues remain before fusion can be deployed for usable energy production. These issues include scientific challenges, regulatory questions, and market forces, all of which must be addressed to deliver on the promise of fusion and meet global needs for clean energy.

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Zoom Link: https://rutgers.zoom.us/j/95124198614?pwd=dnBzWnhUTmVSRjJZaVR1QnpvazduZz09