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Overview of the Heavy Ion Fusion Program

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The world Heavy Ion Fusion Program is looking toward the development and commissioning of several new experiments. Recent and planned upgrades of the facilities at GSI and in Japan greatly enhance the ability to study energy deposition in hot dense matter. In Russia the ITEP-TWAC (Terrawatt accumulator), beginning precommissioning by late 2000, will study the interaction of heavy ions with hot dense matter, and target implosion. Worldwide target design developments have focused on non-ignition targets for nearterm experiments and designs which while lowering the energy required for ignition, tighten accelerator requirements. The U.S program is transitioning between scaled beam dynamics experiments and high current experiments with power-plant-driver-scale beams. Current effort is aimed at preparation for the next-step large facility, the Integrated Research Experiment (IRE)-- an induction linac accelerating multiple beams to a few hundred MeV, then focusing to deliver tens of kilojoules to a target. The goal is to study heavy ion energy deposition, and to test all of the components and physics needed for an engineering test of a power plant driver. This paper will include an overview of the Heavy Ion Fusion program abroad and a more in-depth view of the progress and plans of the U.S. program.

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