

Abstract Submitted
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Scientific objectives and key features of a sequence of heavy-ion-beam-driven facilities for high energy density physics and fusion¹
B. GRANT LOGAN, LBNL — (On behalf of Heavy Ion Fusion Virtual National Laboratory-LBNL, LLNL, PPPL). Successful longitudinal and radial compression of intense neutralized heavy ion beams in the Neutralized Drift Compression Experiment (NDCX-I), together with novel acceleration and compression waveforms using existing induction accelerator modules will lead to an upgraded facility (NDCX-II) capable of driving warm dense matter targets to 1 Mbar, and planar direct drive targets to study hydro-coupling efficiency with beams ramping up in velocity and range. Two further significant enhancements in the heavy ion program, construction of IB-HEDPX with more existing accelerator modules, and commencement of design and R&D for a Heavy Ion Driven Target Implosion Experiment (HIDDIX), could occur after successful experiments in NDCX-II, and after successful ignition in NIF, respectively. Fruition of these research opportunities for heavy-ion-driven high energy density physics (HEDP) and fusion over the next twenty years could establish the HEDP target physics knowledge base needed for a heavy ion fusion test facility, as well as for fundamental HEDP in warm dense matter important to many scientific applications as well as to fusion.

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