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Diagnostic Development for Heavy-Ion Based HEDP and HIF Experiments

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DIAGNOSTIC DEVELOPMENT FOR HEAVY-ION BASED HEDP AND HIF EXPERIMENTS*. F. BIENIOSEK, D. BACA, P.K. ROY, P.A. SEIDL, S.S. YU, LBNL, A.W. MOLVIK, LLNL, M.K. COVO, D. SHIRAKI, UC Berkeley, HIF-VNL COLLABORATION — We discuss diagnostics used in the Heavy Ion Fusion Virtual National Laboratory (HIF-VNL). Time-resolved optical imaging diagnostics provide 4-D transverse beam phase space information on the experimental beams. Current work includes a high speed (sub-ns) optical system, a compact optical diagnostic suitable for insertion in transport lines, improved algorithms for data analysis, and a high-resolution electrostatic energy analyzer. A longitudinal diagnostic kicker/buncher generates longitudinal space-charge waves. Time of flight of the space charge wave and the electrostatic energy analyzer provide an absolute measure of the beam energy. Special diagnostics to detect secondary electrons and gases desorbed from the wall have been developed. Optical imaging of the gas cloud is used to study evolution of the gas cloud and as a beam current diagnostic. Experiment and diagnostics definition and layout for upcoming high energy density physics (HEDP) experiments are in the planning stages. *This work performed under the auspices of the U.S Department of Energy by University of California, Lawrence Livermore and Lawrence Berkeley National Laboratories under contracts No. W-7405-Eng-48 and DE-AC02-05CH11231.

- Prefer Oral Session
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