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NIMROD Simulations for a Spheromak Compression Experiment at General Fusion DEREK SUTHERLAND[1], Massachusetts Institute of Technology, STEPHEN HOWARD, MERITT REYNOLDS, General Fusion — NIMROD simulations are being conducted in support of a spheromak compression experiment being conducted at General Fusion. These simulations model the formation of a spheromak plasma within the compression chamber. Multiple vessel designs, magnetic field geometries and strengths are being analyzed in the simulations. The compression stage of the machine utilizes high-speed explosives placed symmetrically around the cylindrical chamber. These explosives collapse the flux conserver structure radially inward and compress the spheromak to produce sub-gain thermonuclear conditions. Preliminary experimental operations of the spheromak formation have begun within a mobile platform that will be taken out to a remote location for conducting compression experiments. Results from compression tests will be presented if these proceed according to plan. Estimates of expected DD neutron yields have been calculated from expected values of temperature, density, and confinement time determined by both simulation and collected data. Actual DD neutron yields may be collected from an indium-activation detector system, using a high-purity germanium detector for gamma spectroscopy.

[1]Internship at General Fusion

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