Initial Results from the Pulsed High Density (PHD) Experiment

Samuel Andreason, Hiroshi Gota, Chris Pihl, George Votroubek, John Slough
Plasma Dynamics Laboratory, University of Washington, Seattle, WA 98195

Abstract

The Pulsed High Density (PHD) experiment at the Naval Research Laboratory (NRL) was designed to study the magnetic field-driven plasma injection and fusion of high density plasmas with the goal of achieving ignition. The PHD experiment uses a large current-driven magnetic field to compress a high density plasma into an imploding core. The implosion is triggered by a central electric field. The magnetic field is produced by a large current flowing through a set of hollow coils. The coils are placed in a vacuum chamber with a central cathode. The plasma is introduced into the chamber through a series of injector tubes. The plasma is heated to high temperatures using a set of electron guns. The plasma is then compressed by the magnetic field and heated by the electric field. The experiment is designed to study the magnetic field-driven plasma injection and fusion of high density plasmas with the goal of achieving ignition.

References