Abstract Submitted
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Three-dimensional simulations of the compressible, low-Reynolds number, flow around a hohlraum in a fusion chamber[1] HASIB UDDIN, CARLOS PANTANO, University of Illinois at Urbana-Champaign, GWEN LOOSMORE, Lawrence Livermore National Laboratory — Three-dimensional immersed interface simulations of the flow around a hohlraum in a fusion chamber will be presented. The high injection velocity of the hohlraum results in important compressibility effects while the Reynolds number is quite low due to the high temperature in the chamber (up to 8000K); still well within the continuum limit. A stable recirculation region forms behind the object. In addition, the hohlraum surface temperature is very low to preserve the hydrogen pellet at cryogenic conditions. These conditions are not commonly encountered in flows around blunt objects since high Mach number usually implies high Reynolds number. We study the effects of spin rate at different angles of attack and free flight dynamics. The formation of near surface secondary flow patterns is discussed as well as the distribution of the heat flux.

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