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Author: Prof. Samuel Cohen
Princeton Plasma Physics Laboratory, United States, scohen@pppl.gov

REDUCING NEUTRON EMISSION FROM SMALL FUSION ROCKET ENGINES

Abstract

The mainstream fusion efforts to generate electrical power, represented by the ITER and NIF projects, would use D-T fuel to produce energy and their neutrons to breed the needed tritium. Such approaches to fusion power are predicted to result in extremely large, massive, and high power (GW) reactors, ill suited for spacecraft missions envisaged for the next century. We have been investigating a different fusion reactor concept based on an advanced-fuel, RF-heated, field-reversed configuration (FRC) and find that small, relatively low power (1-10 MW) reactors with high specific power are possible. Herein we describe the methods to reduce neutron emission to below 1