

Abstract Submitted
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Suprathermal Ion Populations in ICF Plasmas – Implications for Diagnostics and Ignition¹ PATRICK KNAPP, PAUL SCHMIT, DANIEL SINARS, Sandia National Laboratories — We report on investigations into the effects of suprathermal ion populations on neutron production in Inertial Confinement and Magneto-Inertial Fusion plasmas. In a recent article we showed that a suprathermal population taking the form of a power-law in energy will significantly modify the shape and width of the neutron spectrum and can dramatically increase the fusion reactivity compared to the Maxwellian case [1]. Specific diagnostic signatures are discussed in detail. We build on this work to include the effect of an applied magnetic field on the neutron spectra, isotropy and production rate. Finally, the impact that these modifications have on the ability to reach high fusion yields and ignition is discussed.

[1] P.F. Knapp, D.B. Sinars and K.D. Hahn, Phys. Plasmas 20, 062701 (2013)

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