

Abstract Submitted
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Beam-instabilities and their impact on anomalous neutron reactivity ALES NECAS, SCOTT NICKS, TOSHIKI TAJIMA, RICHARD MAGEE, TriAlpha Energy, TRIALPHA ENERGY TEAM — Field Reversed Configuration (FRC) toroidal current is sustained with the neutral beam injection (NBI). Thermal plasma is deuterium and beams are hydrogen. If there exists some beam driven modes that can make clumpy distribution in its phase space of the beam-plasma system, the plasma bulk portion of the clumpiness can contribute to enhance the fusion reactivity (Anomalous increase of neutrons originating from thermonuclear D+D reaction is observed signaling rise of thermal ions temperature. It is useful to study a beam heating of the thermal ions via a beam-driven instability). Thus it is of crucial interest if and what kind of beam-driven instabilities are available for the C-2 experimental conditions under which this anomalous neutron yield is observed (see accompanying abstract). As a starter, the hot plasma electrostatic dispersion relation with the ion beam is investigated as to determine possible growth rate and heating associated with the beam.

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