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Theoretical Investigation of Proton-Bore Fusion in Hot Spots

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Abstract : As an alternative to D–T fuel, one can consider advanced fuels like D3-He and p-11B fuels, which have potential advantages concerning availability and/or environmental impact. Hot spots are micron-sized magnetically self-contained sources observed in pinched plasma devices. In hot spots, fusion power for 120 keV < Ti < 800 keV and 32 keV < Te < 129 keV exceeds bremsstrahlung loss and fraction of fusion power to bremsstrahlung loss reaches to 1.9. In this case, gain factor for a 150 kJ typical pulsed generator as a hot spot source will be 7.8 which is considerable for a commercial pinched plasma device.

Keywords : P-B fuel, hot spot, bremmsstrahlung loss, ion temperature
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