Assessment of Compact Low Neutron Fusion Reactor Concepts

Authors: H. V. Wong; M. T. Kotschenreuther; B. N. Breizman; J. W. Van Dam; Richard D. Hazeltine; TEXAS UNIV AT AUSTIN INST FOR FUSION STUDIES

Abstract: A brief summary of our results is as follows. We find that, in the proton-boron colliding beam fusion reactor, the power which must be supplied to maintain an optimal colliding beam configuration is estimated to be as least 5.1 times greater than the fusion power. This implies that effective power conversion efficiencies to electrical power in excess of 84% will be required. Furthermore, if the transverse collisional spread of the proton beam is to be limited by electron drag, the boron density is constrained to have magnitudes will below the optimal value at which the fusion power is maximized.

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