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Physics of expander divertors for Field Reversed Configurations
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The SOL and divertor play a significant role in the operation of TAE experimental devices: they provide conditions needed for thermal insulation of plasma electrons from the device ends, allow control of plasma rotation, and contribute to the global magneto-hydrodynamic stability of the plasma. Better understanding of the physics processes associated with divertor expanders is necessary for advancing the plasma parameters to regimes with high electron temperature. The following issues are addressed in the poster: formation and spatial re-distribution of neutral particles formed at the end-plates; effects of neutrals on the heat loss from the main plasma, effects of Charge Exchange on exhaust flow and density distribution in the divertors, and others. Particular attention is paid to the solution of an idealized benchmarking problem of the formation of a potential barrier for electrons in the expanders. Work at LLNL was funded by Tri-Alpha Energy and performed under DoE contract DE-AC52-7NA27344.

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