Theory of Jets in Tokamaks

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A new class of bifurcation of the momentum balance equations for a tokamak plasma is presented. The solution exhibits a monopolar localized jet of E×B flow. The jet is generated by the reduction of turbulent viscosity due to E×B velocity shear. Strong jets of localized plasma flow have been observed in tokamaks as a precursor to the development of a transport barrier region with reduced turbulent transport. The jet solution is shown to fit well with the experimental observations.

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