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【635】 Propagation of thermal plasma blobs in inhomogeneous magnetic fields

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Localised pressure perturbation “blobs” of plasma in a magnetic field with a field gradient $\text{grad } B$ perpendicular to the field direction experience an interchange instability. The resulting propagation of a blob down the field gradient is similar to the Rayleigh-Taylor instability in neutral fluids, and contributes to intermittent losses in the outer scrape-off layer of fusion plasmas. We study blob acceleration, propagation and nonlinear break-up by simulations with a thermal full-f gyrofluid model for various experimentally relevant initial conditions of the blob pressure, with different combinations of positive or negative density and temperature perturbations, such as hot density blobs with increased temperature, or cold density blobs with locally decreased temperature.

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