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Influencing Edge Turbulence via X-point Geometry[1] T. STOLTZFUS-DUECK, Max-Planck-Institut für Plasmaphysik — Turbulent fluctuations near the last closed flux surface of a diverted tokamak are strongly influenced by the combination of parallel electron motion and magnetic geometry. Close to the X-point, localized magnetic shear distorts flutelike perturbations, exponentially enhancing $k_\perp$. The parallel current allows the resulting high-$k_\perp$ X-point physics to effectively react back on the turbulent drive in the outboard midplane region, suggesting that turbulence and transport in the edge region could be influenced through variation of the X-point geometry. Effects of such variation, for example the separate and joint rotation of the separatrices at the X-point, are investigated via systematic field-line projection of warm-ion gyrofluid equations onto a parametrized family of model X-point magnetic geometries. Physical effects are clarified via the explicit dependence of the advection and dissipation operators on the geometric parameters. Possible experimental applications are discussed.

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