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**Effect of Boussinesq approximation on SOL turbulence computations**[1] K. BODI, IIT Bombay, G. CIRAOLO, CNRS, Centrale Marseille, PH. GHENDRIH, IRFM-CEA, F. SCHWANDER, CNRS, Centrale Marseille, E. SERRE, CNRS, P. TAMAIN, IRFM-CEA — Fluid models of edge-scrape-off layer turbulence typically involve the drift approximation, thereby reducing the momentum conservation perpendicular to the magnetic field to a single vorticity equation. A further assumption of scale-separation between fluctuation and background density length-scales is used to linearize the vorticity expression for ease of computation. This assumption is referred to as the Boussinesq approximation. However, in practice there is no significant scale separation between background density variation and fluctutaion scales in edge-SOL turbulence. Considering the case of an isolated blob in the SOL region, we report the effect of the Boussinesq approximation in the evolution of a density perturbation into a convecting dipole, both in linear analysis and in nonlinear simulations using the code TOKAM-2D. We will also compare the turbulent density and potential fields that are obtained using TOKAM-2D, and examine the validity and effect of the Boussinesq approximation with respect to the fluctuation scales.

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