

Peer Review

Review of: "Spatially Modulated Plasma Profile for Turbulence and Instability Mitigation in Fusion Plasma"

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The idea of this paper is original. It would be interesting if it can

be applied to a tokamak plasma, i.e., to a real plasma for fusion. The constant u_p appearing in the equation for the charge density in the paper is an oscillating function, a simple cosine function. The equation is the one-dimensional equation for the charge density, and with the insertion of the periodic function, it becomes the Mathieu equation. The system is linearly approximated, and the solution can be exponentially increasing or decreasing according to the chosen plasma parameters. In this way, it is shown that perturbations, or plasma instabilities, can be stopped. But the system with which this result is obtained is one-dimensional with a particular oscillating coefficient in the density equation. It would be very interesting to generalize this result to the case of a fusion plasma in a tokamak, for example. But this is not easy because the constant appearing in the equation has a complicated dependence on the pressure, density, and magnetic field, and the equation is not defined in a torus. Thus, the geometric constraint is not satisfied. For satisfying it, the density equation should be written in toroidal coordinates. The dependence on the pressure, density, and magnetic field can be argued by the many measures taken for fusion plasma.

Declarations

Potential competing interests: No potential competing interests to declare.