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Investigation of L-H Transition Criteria and Pedestal Structure Based on Three-Field Bifurcation Model

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This research aims to study the effects of input sources on *L-H* transition as well as width and height of pedestal in tokamak fusion plasmas based on three-field bifurcation model. Three transport equations including thermal, particle density and toroidal momentum density are solved simultaneously including residual stress term and convection term, resulting in the prediction of plasma pressure, plasma density and toroidal velocity profiles at steady state. The transport effects include both neoclassical and anomalous transport with velocity shear dependent suppression function. The results show physical profiles of plasma pressure, plasma density and toroidal velocity versus normalized plasma minor radius. The input sources (heat/particle /toroidal force density source) are varied to find the onset of *L-H* transition by using contour method of input sources. In addition, relation of width and height of the pedestal for all three fields are investigated.

Keyword: bifurcation, pedestal, edge transport barrier

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