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Control of ITBs in Magnetically Confined Burning Plasmas SR PANTA, DE NEWMAN, Univ of Alaska- Fairbanks, PW TERRY, Univ. of Wisconsin Madison, R SANCHEZ, Univ. Carlos III de Madrid — In the magnetically confined burning plasma devices (in this case Tokamaks), internal transport barriers (ITBs) are those regimes in which the turbulence is suppressed by the E X B velocity shear, reducing the turbulent transport. This often occurs at a critical gradient in the profiles. The change in the transport then modifies the density and temperature profiles feeding back on the system. These transport barriers have to be controlled both to form them for improved confinement and remove them to both prevent global instabilities and to remove the ash and unnecessary impurities in the device. In this work we focus on pellet injection and modulated RF heating as a way to trigger and control the ITBs. These have an immediate consequence on density and temperature and hence pressure profiles acting as a control knob. For example, depending upon pellet size and its radial position of injection, it either helps to form or strengthen the barrier or to get rid of ITBs in the different transport channels of the burning plasmas. This transport model is then used to investigate the control and dynamics of the transport barriers in burning plasmas using pellets and RF addition to the NBI power and alpha power.

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