

Abstract Submitted
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Overview on Density Pedestal Structure: Role of Fueling versus Transport¹ SASKIA MORDIJCK, College of William and Mary , JERRY HUGHES, MIT PSFC, RICH GROEBNER, GA, AHMED DIALLO, PPPL, THE DIII-D TEAM, THE C-MOD TEAM, THE NSTX TEAM — In this paper we will give an overview of the results from the 2019 Joint Research Target on what sets the pedestal density structure based on experimental observations from DIII-D, C-Mod and NSTX as well as theoretical models. In ITER and other future burning plasma magnetic confinement devices, the ionization source will be pushed further out into the Scrape-Off Layer. This motivates the question, how much of the pedestal density structure is governed by this edge ionization source versus plasma transport effects? Theoretically, several turbulent modes have been identified which could provide a pinch like up-gradient transport mechanism. In a source-free region, a peaked density profile relies on this non-diffusive inward pinch component. In an opaque edge, without the existence of such a pinch, the pedestal density structure on closed flux surfaces would eventually disappear. The experiments and modeling as part of the JRT will address the effects of opaqueness, divertor closure and fueling locations and their role in determining the density pedestal structure. Preliminary results indicate that details of the pedestal ionization source and of peeling-ballooning stability have important effects on the density pedestal structure.

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