# Overview of Experimental Characterization of the H-mode Edge Pedestal Structure*

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The status of experimental characterization of the structure of the H-mode edge pedestal is reviewed in this overview. Determination of the MHD stability limit of the pedestal to intermediate mode number peeling-ballooning models has provided a strong constraint on the achievable pedestal pressure gradient in a given configuration. With the validation of the MHD model the focus of pedestal studies has shifted to understanding the shape and width of the pedestal profile. Previous attempts to understand and scale the pedestal width through database comparisons of multiple devices has been less than satisfactory due to a number of issues that must be overcome including: correlation with the MHD limit; time dependence; measurement difficulties; and correlation of parameters. In addition, the components of the pressure, namely the ion and electron density and temperature, may have significantly different profiles and pedestal widths. Recently, scaling of the pedestal width has progressed by careful experimental studies that isolate individual parameters to uncover the underlying mechanisms setting the pedestal width. The ion gyroradius, a key parameter under study, is predicted by several theories to set the pedestal width. Dedicated cross machine comparisons are also finding consistent variations of the pedestal width due to changes in global beta and/ or input power. Specific experiments are also examining the effects of shape, toroidal field ripple, aspect ratio, toroidal rotation, and neutral density. The L-H transition conditions are also an important aspect of pedestal studies not only for predicting the power requirements for future devices, but also for understanding of the transport suppression mechanisms. Recent work has indicated a dependence of the H-mode transition on edge flows and momentum input. Newly developed theory and modeling now offer the potential to treat the pedestal region in a more realistic and comprehensive manner. Initial tests of new models will be summarized.

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