Influence of the instrument function on the reconstructed pedestal structure of TCV ELMy H-modes

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Abstract.

The type-I ELMy H-mode scenario is the baseline scenario foreseen for ITER to reach the Q=10 target. It is characterised by the presence of an edge barrier - or pedestal - in the heat and particle transport channels. In this scenario the overall plasma performance is strongly dependent on the height of the pedestal and hence it is of crucial importance to be able to predict this value for future experiments. The EPED model [1, 2] has shown some progress in that respect for type-I ELMy H-modes. In order to better assess the reliability of such models, it is important to be able to reliably characterise the pedestal structure in present experiments. It has been shown [3] that proper de-convolution of the Thomson Scattering profiles can be needed when the instrument function length is comparable to the gradient scale length.

This paper will report on the influence of the de-convolution of the Thomson Scattering profiles on the parameters of the standard "mtanh"-fit for a set of TCV ELMy H-mode discharges spanning different levels of coverage by the Thomson Scattering system. Preliminary results show that as the number of channels increase and the individual integration length for these channels decrease the deconvolution has a weaker impact on the "mtanh"-parameters, confirming the results of [3]. This set of discharges will also be used for a detailed comparison of the measured pedestal structure with the one predicted by EPED-CH [4], a recently developed version of the EPED1 model.

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[3] R. Scannell, et al., *Rev. Sci. Instrum.* **82**(5), 053501 (2011)
[4] A. Merle, et al., *Plasma Phys. Control. Fusion* **59**(10), 104001 (2017)