

Abstract Submitted
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Modulated Electron Cyclotron Heating of TCV Plasmas In the presence of Heat Waves Nonlinear Coupling¹ ILYA PAVLOV, JEAN-MARC MORET, CRPP - EPFL — Heat pulse propagation experiments for studying electron heat transport have been performed on TCV tokamak in various plasma conditions. Detailed analysis demonstrates the simultaneous propagation and non-linear interaction of heat pulses induced by Modulated Electron Cyclotron Heating (MECH) and sawtooth activity. The effect of the nonlinear coupling of these heat waves on the measured temperature perturbation will be illustrated. This is undertaken by analyzing sawtooth plasmas at different MECH localized deposition, and different modulation frequencies. Since both types of heat waves are periodic events of approximately fixed frequency, and since both heat pulse propagations are subject to essentially the same transport physics, non-linear coupling plays an important role when studying perturbative transport. In particular, non-linear coupling in MECH experiments can contaminate the time traces of temperature profiles. The latter are used to extract the electron heat diffusivity for so-called transient transport. Methods to treat such kind of signals on the basis of Higher Order Spectral or polyspectra analysis will be presented.

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