

Abstract Submitted
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Third Harmonic Extraordinary Mode Heating of L-mode and H-mode Plasmas on TCV¹ LAURIE PORTE, STEFANO ALBERTI, GILLES ARNOUX, YVES MARTIN, RICHARD PITTS, CRPP-EPFL, Association EURATOM - Confédération Suisse, 1015 Lausanne, Switzerland — A third harmonic extraordinary mode (X3) electron cyclotron resonance heating (ECRH) system has been used to heat L-mode and H-mode plasmas on the TCV tokamak. The radiation is launched vertically along a line of constant magnetic field strength to maximize absorption. A real time control system has been deployed and is used to adjust the poloidal angle of the launch mirror to counteract changes in absorption and refraction during the pulse. Results from its application will be presented. Ohmic ELMy H-modes are routinely obtained on TCV, but access to stable, additionally heated ELMy H-modes has only been made possible with the addition of 1.5 MW ($\approx 3P_{\Omega}$). Experiments in which X3 heating is applied to an established ohmic ELMy H-mode have produced stationary phases of large ELMs in which $\delta W_e / W_e \approx 10\%$ compared with $<2\%$ in the ohmic phase such that $f_{ELM}\delta W_{ELM}$ remains approximately constant. It has also been possible to access regimes of H-mode like confinement which are ELM-free but quasi-stationary. These experimental results will be described.

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