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# Suppression of Alfvén Eigenmodes by ECH/ECCD in Heliotron J

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Experiments of suppressing Alfvén Eigenmodes (AE) have been made by using a second harmonic X-mode electron cyclotron current drive (ECCD) in the helical-axis heliotron device, Heliotron J. The weak magnetic shear under vacuum condition is modified into a positive magnetic shear when counter-ECCD is applied. The experiments show that global Alfvén eigenmodes (GAE) of around 130 kHz and 350 kHz are fully stabilized, and energetic particle modes (EPM) of around 100 kHz are weakened when the EC current of 0.7 kA is driven on axis. The mode amplitude is more reduced as the EC current is larger. These results indicate that the magnetic shear has an effective role in controlling GAEs as well as EPMs. This study extends the possibility of ECH/ECCD as a control knob for EP-driven MHD modes and give understanding of the excitation and damping mechanisms.

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