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# Influence of electron cyclotron current drive on resistive tearing modes in HL-2A tokamak

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Abstract
The influence of electron cyclotron current drive on the m/n=2=1 resistive tearing mode is investigated using gyrokinetic simulations in HL-2A configuration. The resistive tearing mode (RTM) evolution is calculated with a finite mass electron model, and the rf current source is obtained from the ray-tracing code and the Fokker–Planck code. The resistive tearing modes are shown to be stabilized completely by a continuous 1MW 68GHz X2-mode. It is found that an electron cyclotron wave (ECW) driven current with larger peak value and more focused deposition region has a better stabilization effect. The dependence of RTM magnetic island width and growth rates on injection and input power is also demonstrated. the relevance of this work will contribute to the development of more comprehensive experimental plans for ECCD-based control of neoclassical tearing modes in HL-2A Tokamak.

References
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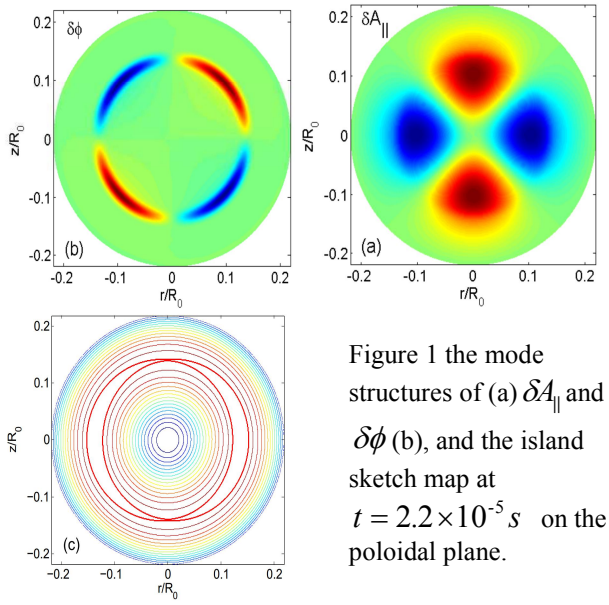


Figure 1 the mode structures of (a) $\delta A_{\parallel}$ and $\delta\phi$ (b), and the island sketch map at $t = 2.2\times10^{-5}\,s$ on the poloidal plane.