Discussion for the Excitation Mechanism of Beta-induced Alfvén Eigenmodes during Strong Tearing Modes on EAST tokamak

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Beta-induced Alfvén Eigenmodes (BAEs) during strong tearing modes has been investigated on EAST tokamak systematically (primarily in the condition of LHW/ICRF is injected). The relation between the BAE frequencies and plasma parameters $n_e$, $T_i$, $q(\rho)$ or $\bar{B}_\theta$ are given in detail during the injection of the power of LHW (or also is accompanied with the injection of ICRF) comprehensively, and the possible excitation mechanism for the BAEs have relied on the populations of fast electrons [1].

The BAEs during strong tearing modes have been excitated in Ohmic plasma on EAST tokamak, and the excitation mechanism has strong relation with three parameters as shown in figure 1: (1).the profile of safety factor $q(\rho)$, (2).pressure gradient $dp/dr$ or (3).the population of fast electrons. An discussion between three excitation source is given in detail.

Figure 1: The Beta-induced Alfvén Eigenmodes (BAEs) during strong tearing modes has observed in Ohmic plasmas, and the excitation mechanism for the BAEs has strong relation with (1).the topology changes of the profile of safety factor $q(\rho)$, (2).the changes of the profile of pressure $p(\rho)$ (or the intensity profile of soft X-rays) or (3).the population of fast electrons.