

Abstract Submitted  
for the DPP12 Meeting of  
The American Physical Society

**Trapped electron effects on ITG modes and TEM in the reversed-field pinch**<sup>1</sup> SONGFEN LIU, Nankai University, Tianjin, China, SHICHONG GUO, Consorzio RFX, Padova, Italy, JIAQI DONG, Zhejiang University, Hangzhou, China & Southwestern Institute of Physics, Chengdu, China — The trapped electron effects on the ion temperature gradient (ITG) driven mode and the trapped electron modes (TEM) are studied in the reversed-field pinch (RFP) plasmas by solving the gyrokinetic integral eigenmode equation. Both collisionless and collisional plasmas are investigated. It is found that, the trapped electron effects usually give a little influence on ITG mode except in very steep density gradient region, where the TEM can couple with ITG and induces the instability even below ITG stability threshold  $\eta_{ic}$ . TEM instability in RFP configuration has been studied extensively in various parameter regions, and compared with the circular tokamak cases. The characteristics of electron temperature gradient (ETG) instability in RFP plasmas are similar with that of the tokamak plasmas in some aspects. However, the excitation of the TEM instability in RFPs requires much steeper density gradient than that in tokamaks. This could be due to the stronger ion Landau damping in RFPs, which has been found to play an important role in the ITG mode physics.<sup>2,3</sup> The detail discussion will be presented.

<sup>1</sup>This

work was supported by ITER Project in China under Grant Nos.2009GB105000, 2009GB105002 and 2009GB105005, and National Natural Science Foundation of China under Grant No. 11105077.

<sup>2</sup>S. C. Guo, *Phys. Plasmas*, **15**, 122510(2008).

<sup>3</sup>Songfen Liu, et al, *Phys. Plasmas*, **17**, 052505(2010).

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Date submitted: 12 Jul 2012

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