

AUG's Heartbeat

Sawteeth in the magnetic shear

IDE, [1] an Equilibrium reconstruction code, is now able to model sawtooth-induced q-profile evolution of ASDEX Upgrade Equilibria [2].

A very hypnotizing evolution of the areas of positive magnetic shear was found while looking for differences in the local magnetic shear calculated from such equilibria during the transition from phases dominated by large type-I ELMs to phases that contain small ELMs [3]. The magnetic shear was calculated by using the practical expressions derived by McCarthy [4]. Figure 1 shows the local magnetic shear of AUG discharge #34483 at 2.72 seconds. The submitted video shows the evolution of the local shear throughout the discharge. The similarity of this evolution to an electro cardiogram is emphasized by the sound of an actual heartbeat. (The video is optimized for modern vertical media consumption on smartphones)

REFERENCES

- [1] R. Fischer et al 2017 Fusion Sci. and Tec. **69**:2
- [2] R. Fischer et al 2019 Nucl. Fusion **59** 056010
- [3] G.F. Harrer et al 2018 Nucl. Fusion **58** 112001
- [4] P.J. McCarthy 2013 PPCF **55** 085011

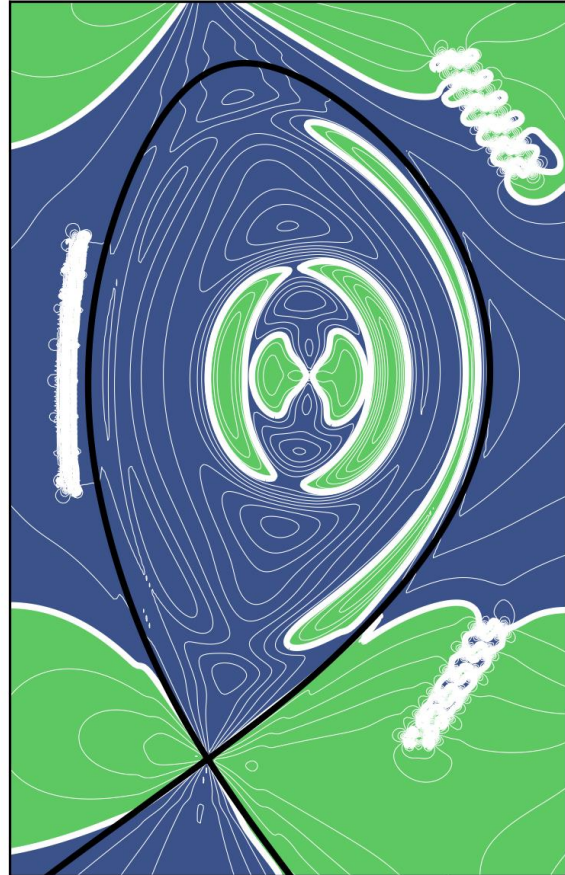


Figure 1 Local magnetic shear of AUG discharge 34483 @2.72s. Green colors represent positive shear, blue colors negative.

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