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## 20 - Mitigation of the Rotational Instability of the Field-Reversed Configuration via Edge-Biasing

*Tuesday 4 June 2019 16:57 (2 minutes)*

The rotational instability of the field-reversed configuration (FRC) has been shown to severely reduce the lifetime of the confined plasma. FRC plasmas have strong rotational modes from the electric drift and the ion-diamagnetic drift. Their nonlinear growth can cause plasma to scrape against the wall, resulting in loss of particles and energy. Edge-biasing refers to applied external fields that modify the rotation in the edge-layer of the plasma. By driven toroidal flow shear, the internal plasma is affected by the rotation in the edge-layer, which leads to improved stability, longer plasma lifetime, and better confinement. This poster will present the basic theory of the FRC plasma and the design of an FRC plasma confinement chamber suitable for nuclear fusion. In particular, the design of edge-biasing electrodes will be presented in detail, along with a description of plasma diagnostics useful for demonstrating FRC plasma stability and confinement.

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