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## Implementation and benchmark of improved boundary conditions for 3D nonlinear MHD code SpeCyl

### Content

An improvement of the boundary conditions scheme of the 3D nonlinear MHD numerical code SpeCyl is presented. Boundary conditions have been shown to play a key role in the helical self-organization both in Reversed Field Pinch [2-3] and tokamak plasmas [4].

Two different sets of boundary conditions have been extensively tested against ubiquitous relaxation phenomena induced by plasma current in toroidal devices: ideal kinks [5] and tearing modes [6]. The role of wall position and resistivity on linear perturbations profiles and their exponential growth rates was tested, motivating the need for a reformulation of fluid boundary conditions as well.

Preliminary results of such new boundary conditions are also presented, along with a summary of the relevant theoretical framework underlying linear MHD instabilities [5-6].

#### References:

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