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# Seminar

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## Institute for Plasma Research

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**Title :** Single and two fluid studies of the tearing mode instability in tokamaks

**Speaker:** Dr. Arkaprava Bokshi

Institute for Plasma Research, Gandhinagar

**Date :** 2nd September 2021 (Thursday)

**Time :** 10.30 AM

**Venue :** Online - Join the talk:

<https://meet.ipr.res.in/PDFextensionArkapravaBokshi>

### **Abstract :**

This talk will focus on the physics needed to capture the tearing mode instability (TMI) in a tokamak using both the single fluid and two fluid set of equations. These sets of equations have been implemented in the BOUT++ numerical framework.

The single fluid model has been extensively validated against CUTIE both in the linear and nonlinear phases of the TMI's evolution. The benefit of reproducing the CUTIE model in a massively parallel framework such as BOUT++ is a >100 speed-up over the serial CUTIE code, reducing the run time from O(month) to O(hours).

The two fluid set of equations have also been implemented and showing reasonable behavior. We will briefly review the remaining challenges and discuss the scope of this work moving forward.

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