

# M3D-C1 ZOOM Meeting

6/29/2020

## Agenda

1. Announcements
2. CS Issues
  1. Local installations
  2. New system benchmark status – Jin Chen
  3. NERSC Time
  4. Changes to GIT master since last meeting
  5. Strange timing in KPRAD - Clauser
3. Physics Studies
  1. Andreas Kleiner: Peeling- ballooning modes In NSTX-U
  2. ITER VDE with new structure -- scj
  3. Runaways with sources Chen Z.
  4. M3D-C1 coupling to KORC: Clauser
  5. Other

# Announcements

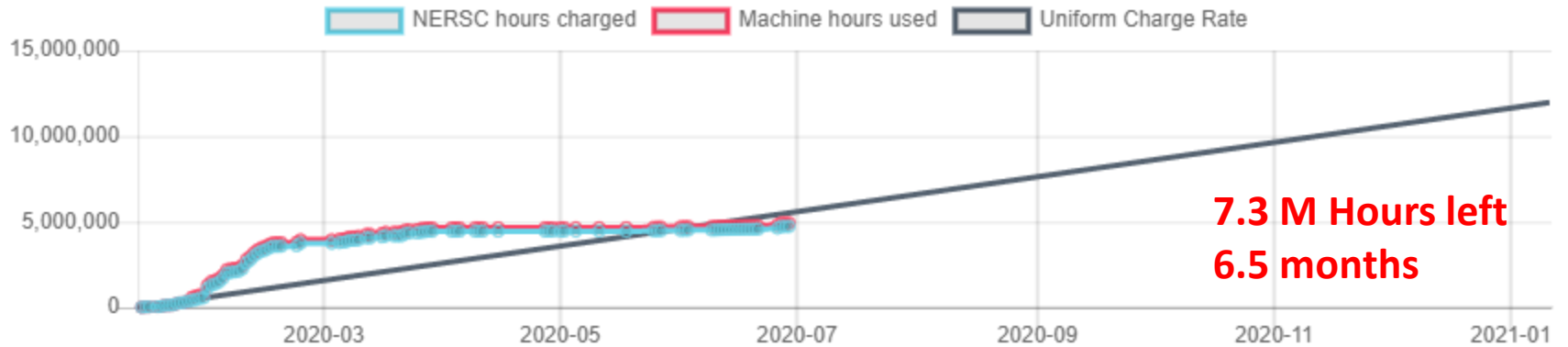
- Laboratory closed unless authorized
  - Once authorized, need to get single access code at <http://rtw-screen.pppl.gov>
- No more partition=greene at PPPL
  - use `#SLURM -partition=m3dc1` (job will run on greene, 8 GB/core)
- Cluster Review Meeting Wed July 8 11:00 AM -- Prentice
  
- APS-DPP Meeting is All Virtual: November 9-13, 2020
  - Deadline for Contributed papers is June 29 (today)
- IAEA Technical Meeting on Disruptions and their mitigation
  - Will be held remotely 20-23 July
  - pre-recorded by talks July 13: (4:3) or (16:9) invited 25 min, other 15 min
- SciDAC PI meeting scheduled for July 28-30 July 2020 is *cancelled*
  - Replaced by a half-day remote panel session on July 29
- ITPA MHD Meeting at IO October 14-16 2020
  - Open to Remote Participation
- IAEA Fusion Energy Conference postponed to May 2021

# Local Installations

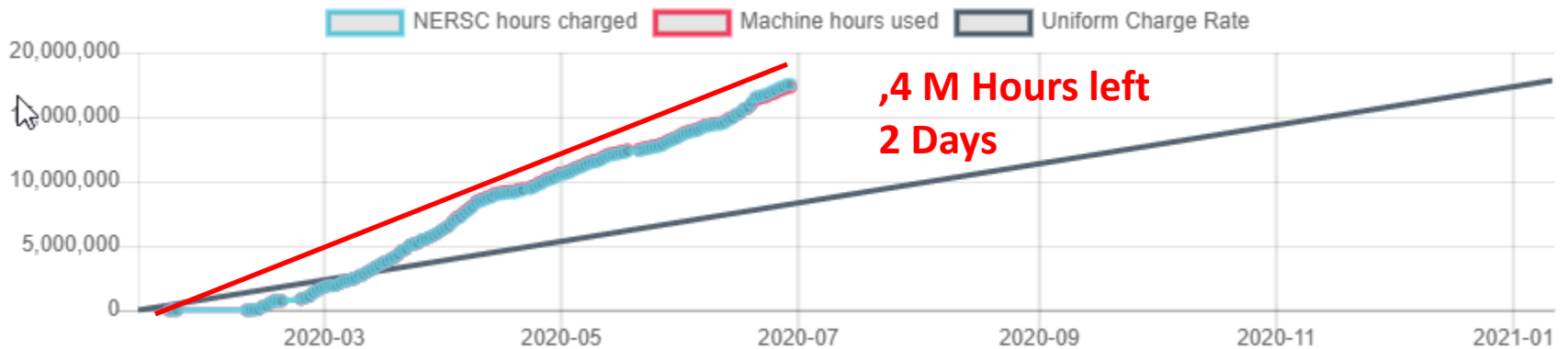
- CENT\_OS-7 on greene
  - Prentice requested we move to OS-7 on greene
  - All regressions tests passed
  - I tested a longer complex case and it passed
  - A real case failed for me
    - m3dc1\_2d: error while loading shared libraries: libgsl.so.23: cannot open shared object file: No such file or directory
- Dawson (or general)
  - Still a hdf5 problem with openmpi/4.0.4
  - regression tests all fail with C1.h5.lock
  - They also fail on greene
  - Should we send in a ticket to the pppl help?

# NERSC

MP288



M3163



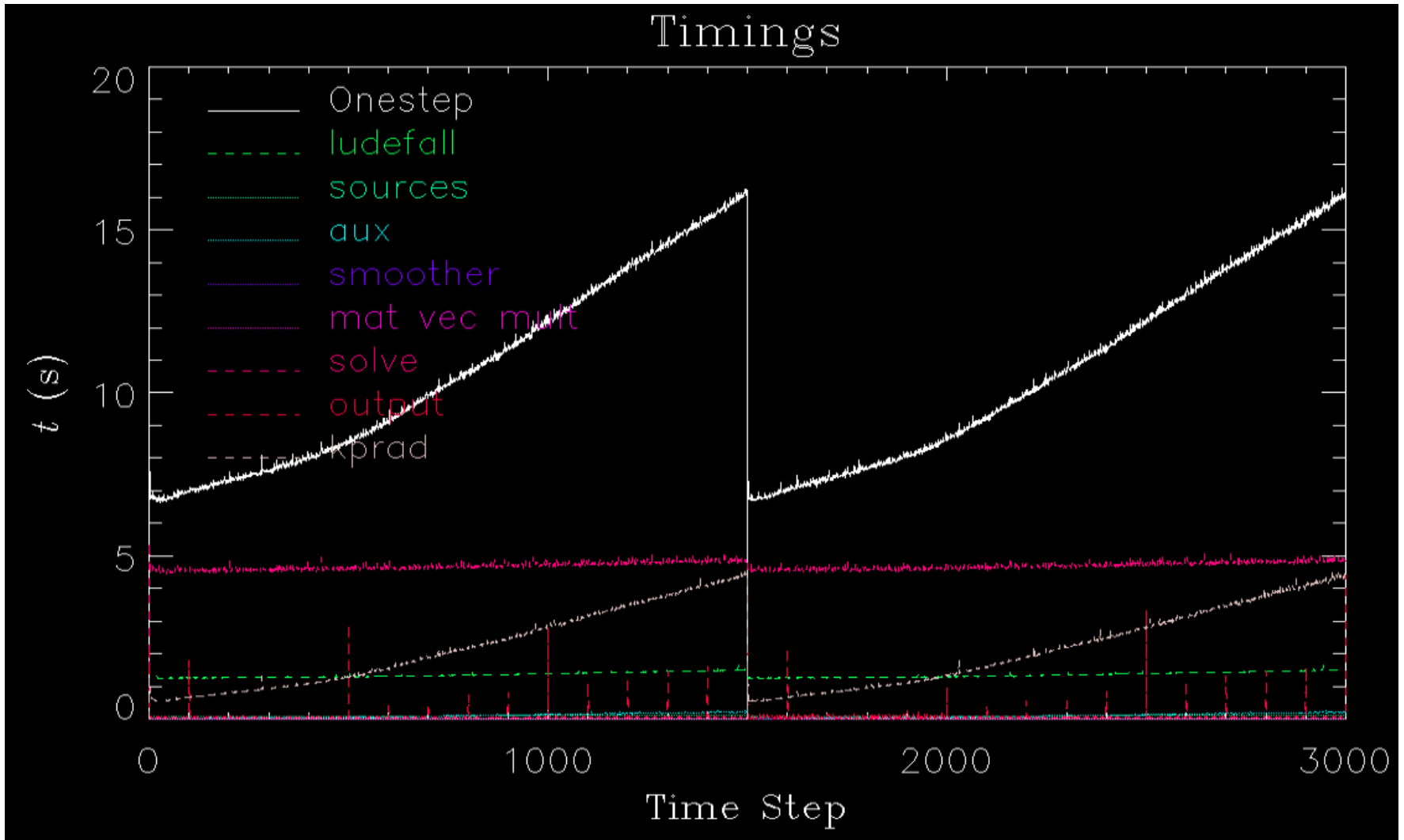
Note NERSC down July 9-14

# Changes to github master since last week

- Clauser:
  - Fixed bug in IDL parallel E field, epar
- Seegyung
  - Updating config files for m3dc1\_scorec on portal
  - Config.sh and makefile for SCOREC Debian6 updated
  - Minor improvement for 3D mesh adaptation

Documented changes in NEWDOC-latest: [m3dc1.pppl.gov](http://m3dc1.pppl.gov)

# Strange timings in KPRAD



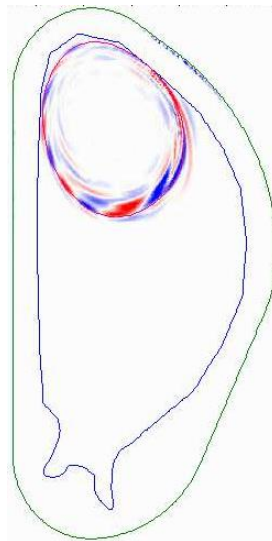
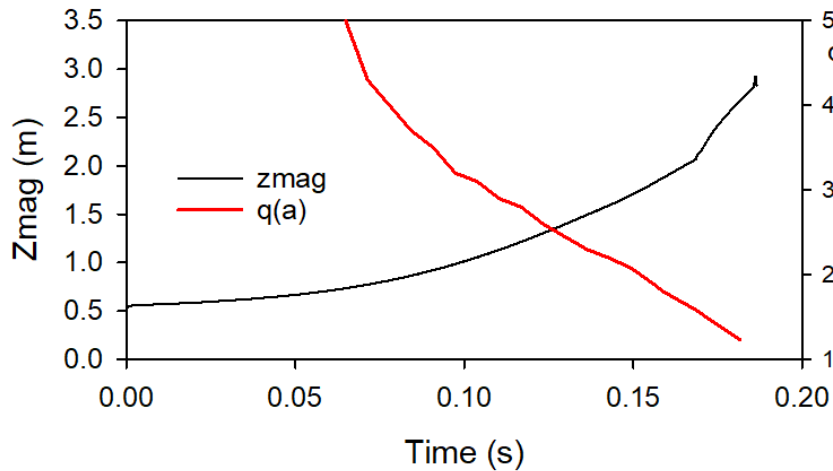
/home/cclausner/NSTX/C\_pellet/r0v0\_2D-1fC0  
/scratch/gpfs/cclausner/NSTX-r0v0\_2D\_1fC0

Clausner

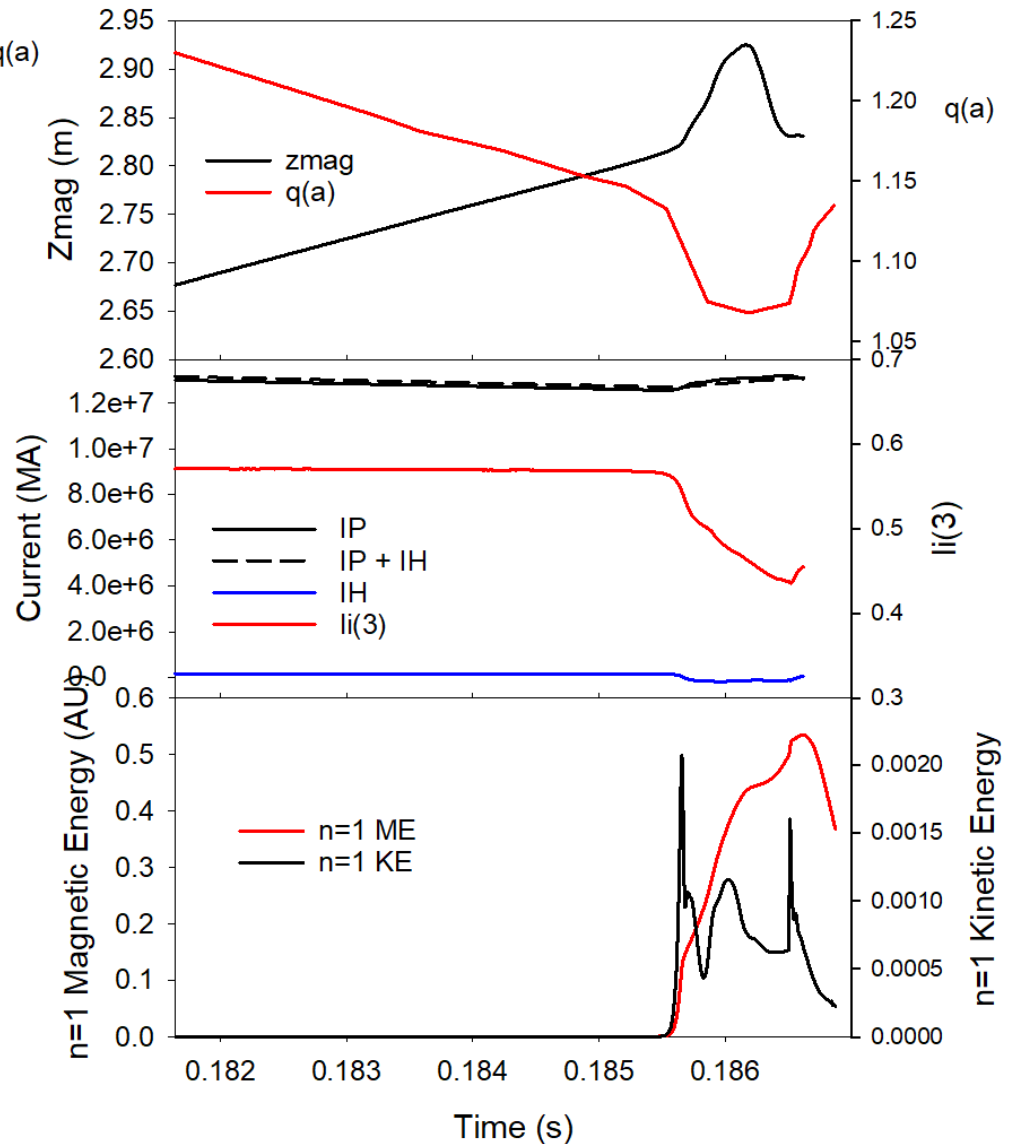
# Peeling Ballooning Modes in NSTX-U

**Andreas Kleiner to present**

# ITER VDE with new structure

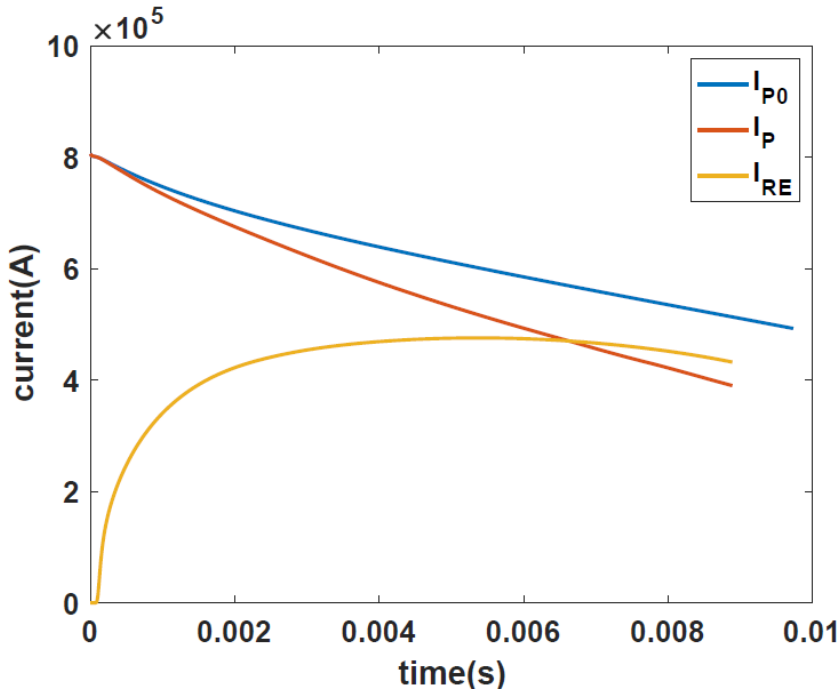


- Started 3D run when  $q(a) = 1.22$
- $q(a)$  does not go below 1 in 3D !
- $n=1$  MHD activity saturates at low value
- Will try starting 3D run with  $q(a) = .95$





# Runaways with Sources

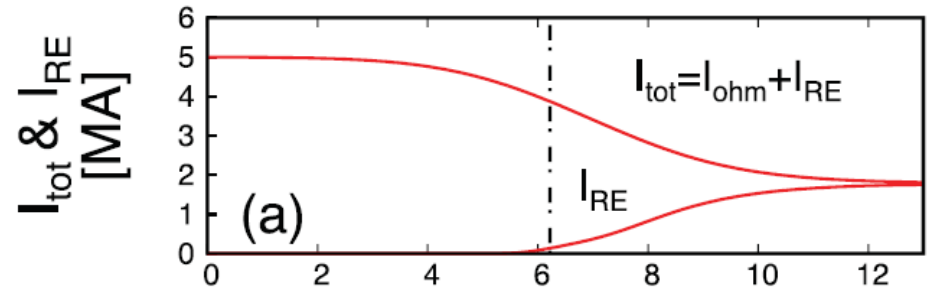


Chen: June 9, 2020

Nucl. Fusion **57** (2017) 066038 <https://doi.org>

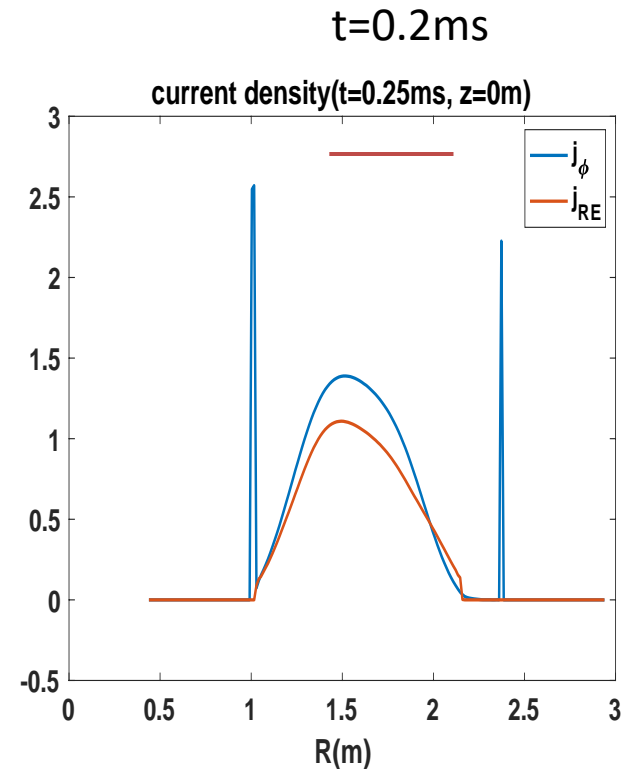
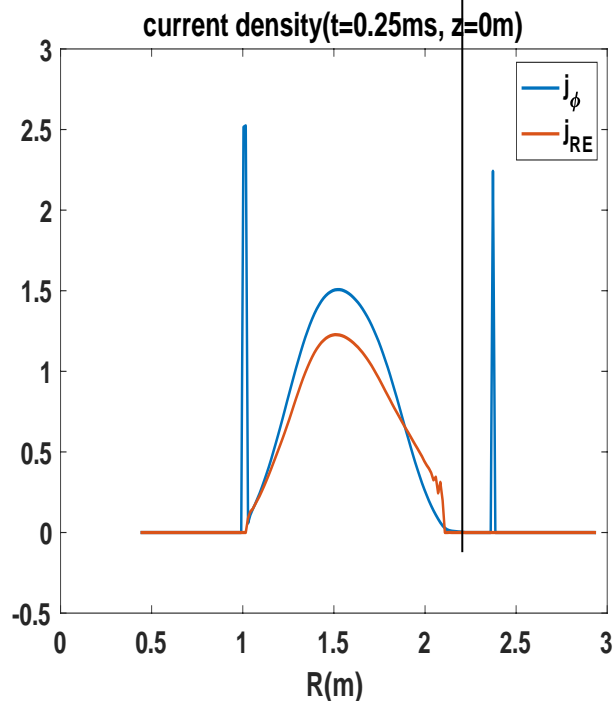
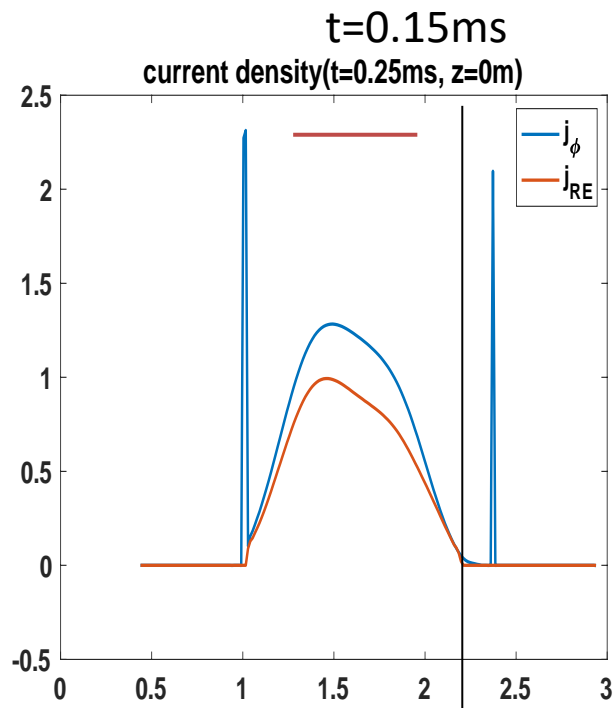
**Reduced fluid simulation of runaway electron generation in the presence of resistive kink modes**

**A. Matsuyama<sup>a</sup>, N. Aiba and M. Yagi**



$$\frac{\partial n_{RE}}{\partial t} + (v_{RE} \mathbf{b} + \mathbf{u}) \cdot \nabla n_{RE} = S_{Dreicer} + S_{avalanche},$$

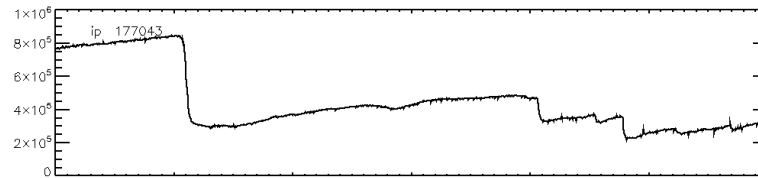
$$E = \eta(J - en_{REC}),$$



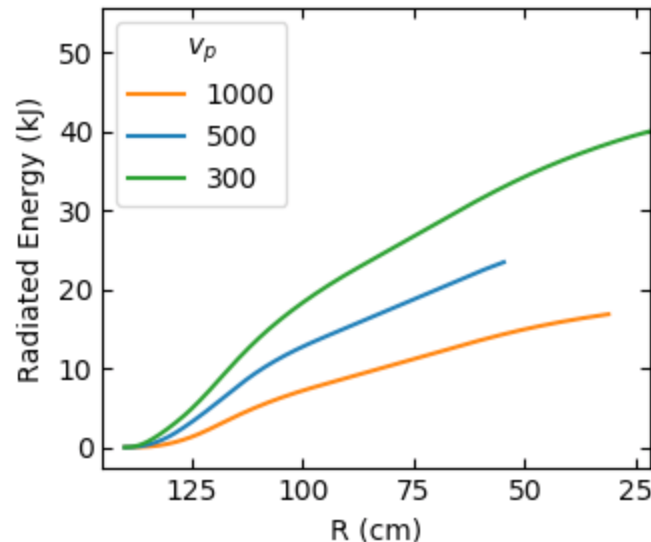
The plasma current moves inward and runaways current is higher than plasma current and this also causes the cross point of the plasma current and runaway current.

# M3D-C1 coupling to RE code KORC

- Plan to target DIII-D shot 177053 after Chen has a full simulation with fluid runaway electrons



- KORC can now run using fields, densities, and temperatures from M3D-C1 hdf5 files using Nate's Fusion-IO routines
- Cesar trying to increase C-concentration to get stronger TQ and CQ



- Total radiated energy increases as pellet speed decreases
- Try 100 m/s ?
- Also trying uniform distribution in 2D

That's All I have

Anything Else ?