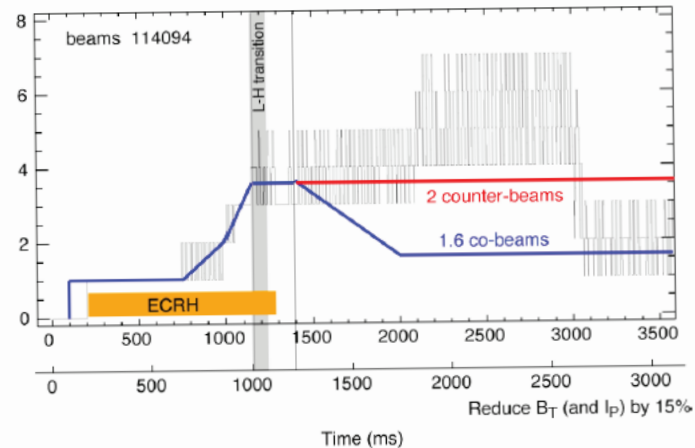
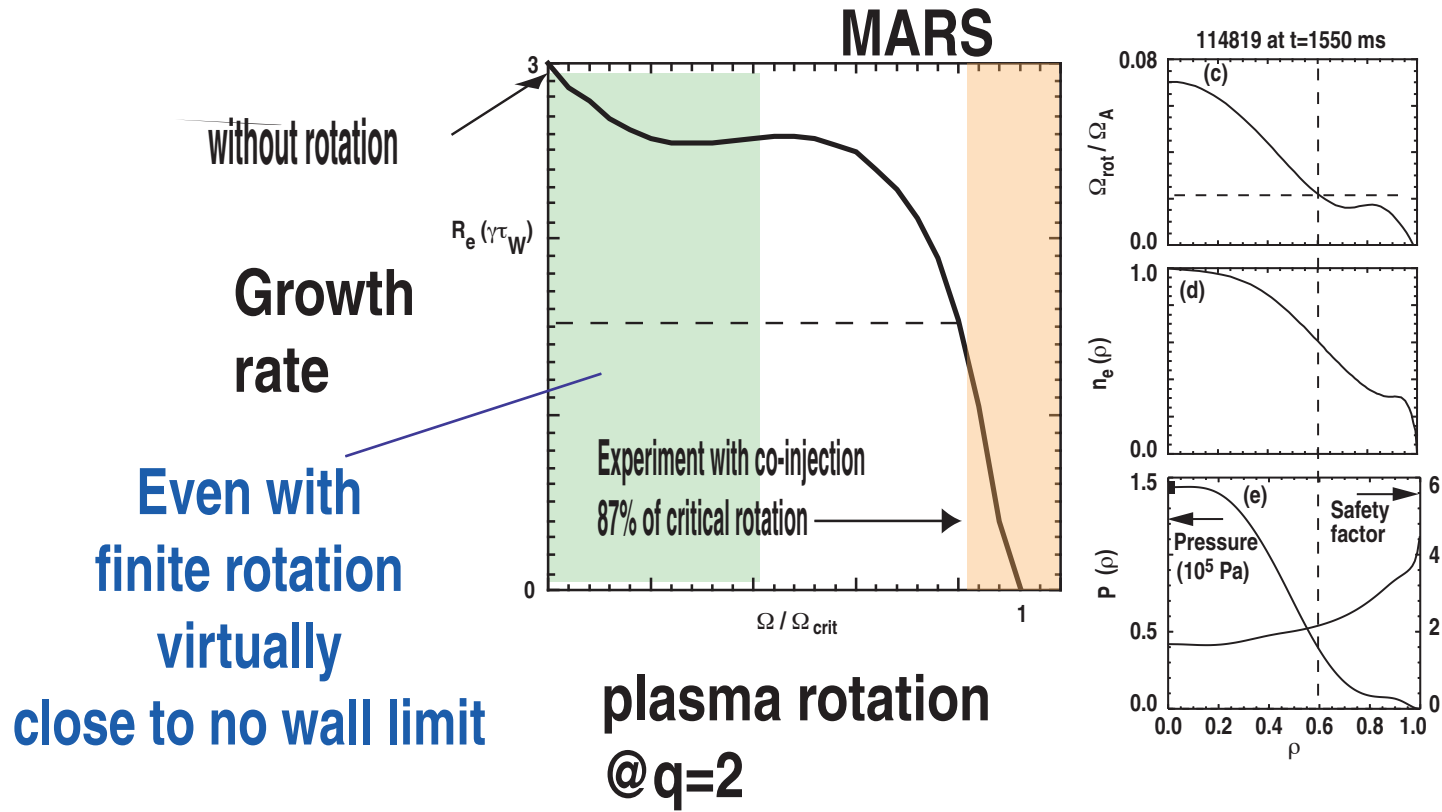


# Ming-Morrell Code Application to RWM feedback in DIIID

- DIIID:balanced NBI ready
  - Virtually zero rotational stabilization
  - + zero torque input at high beta possible
  - + shot scenario under preparation by TRANSP (Bob Budny)



# Balanced Beam Injection is Likely to Reduce Substantially the Rotational Stabilization Effect

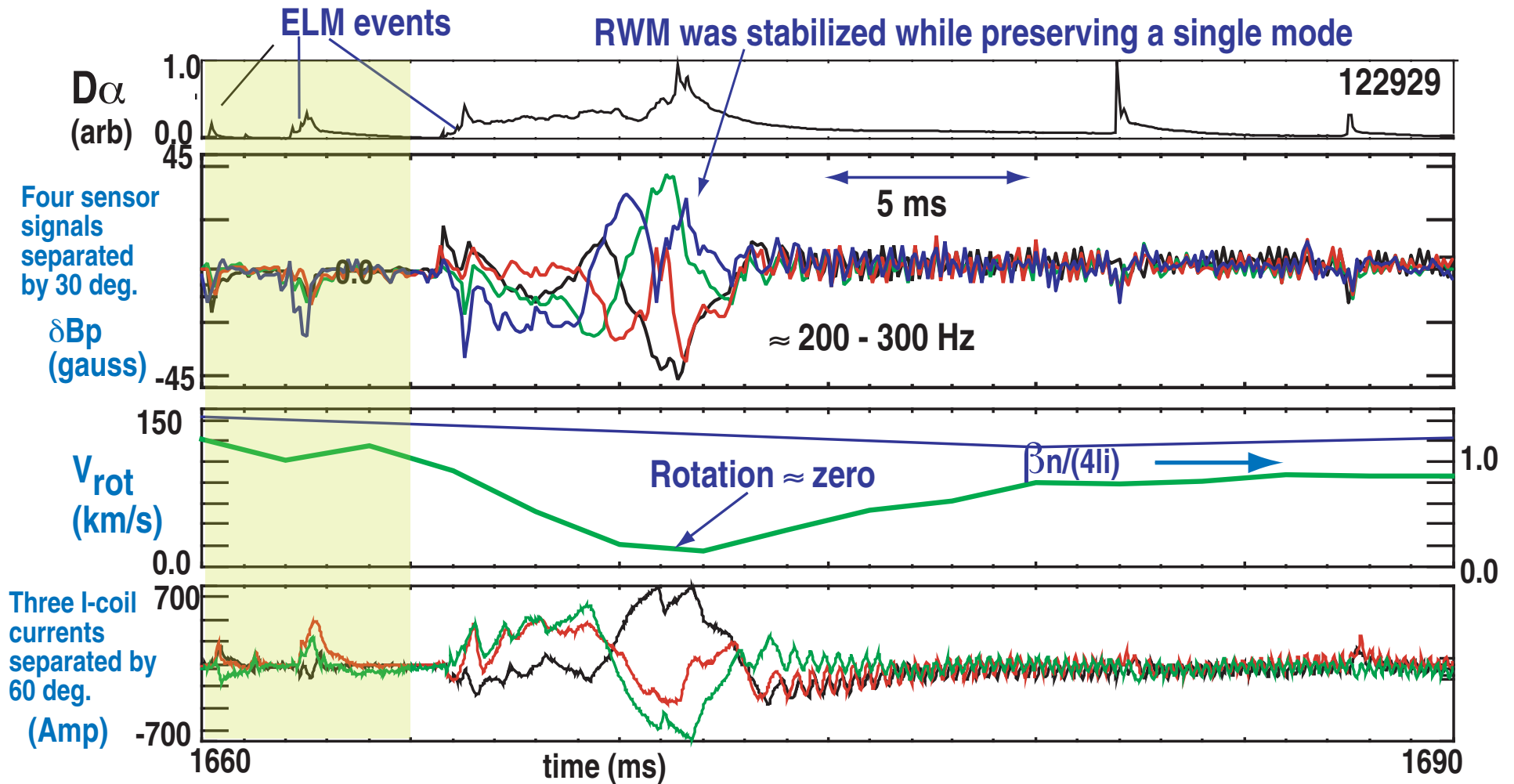


## • Approach / Subjects

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- **Comparison with RWM experiments**
  - Vacuum test (documentation): "realistic as possible" -
    - + For adjusting the wall resistivity along poloidal direction in the MM-code
  - Mode structure: mode rigidity in feedback stabilized high beta plasma
    - + ELM event makes the RWM unstable
- **Comparison with feedback performance**
  - Gain dependence should assess the adequacy of present plasma model
- **Feedback optimization**
  - Optimization of active coils and sensitivity to higher /lower-m
    - + FRA with residual error field in any device
    - + ELM/RWM simultaneous control: active coil design
    - + inner/outer coils in ITER?
  - Suppression scheme of simultaneous  $n=1,2,3$  RFA suppression

# Feedback Suppresses Large Amplitude RWM Buildup and Allows the Plasma to Survive Transient Intervals of Low Rotation



- **Other Applications**

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- **PADE approximation: mode response represented in polynomial form**

Liu and Bondeson, PRL 84,907 (2000)

- **Convenient for including the complexity of power supply etc.**

- **Easy to convert to a time dependent calculation**

- **Recent debate in ITER (even with no plasma rotation), Jim Bialek et al.,**

- **Discrepancy between MARS, VALEN, KNIX (and MM-code?)**

- + **Relative phase between the plasma mode current and the eddy current on the double wall during feedback**

- + **High beta performance**

# RWM Feedback Voltage Control System with Audio Amplifiers

## - Hardware and Analysis -

