

*Given the fact the priorities are shifting to support of ITER, at the same time run-time and budget are being reduced, how can C-Mod do the proposed tasks in this situation?*

*- Assuming that ITER is first priority, how is C-Mod going to use the remaining time to pursue an aggressive AT program? Is this what C-Mod wants?*

*- What are the priorities on new hardware and diagnostics? Give justifications*

# Past and planned run time for AT thrust

- **In FY03, we devoted 15 days (28%) to AT research.** These included for example ITB physics experiments and the AT target plasma development which was used in ACCOME modelling shown by Parker. There were also high bootstrap fraction experiments.
- The nominal allocation is ~17% for FY04
- Expect AT allocation to increase once LHCD experiments underway
- **Yes, we expect to pursue an aggressive AT program**

# AT in FY04 campaign

- **For FY04, following ideas forum, 12 experiments were accorded high priority and allocated run time.**
- It happens that many of these require 2-frequency RF (ie 70 + 80 MHz, or 50 + 80 MHz). Since it takes several days to switch RF frequencies, it is more efficient to schedule these in a 'block' of 1-2 weeks each.
- For technical reasons, these blocks were scheduled near the end of the winter campaign. 50 MHz expts will begin next week, and 70 MHz shortly afterwards. A large fraction of these runs will be devoted to AT.
- Several items of interest to AT (eg diagnostic calibration, low  $n_e$  high P plasmas) were done this campaign in 'piggyback mode' on other experiments, and were thus not 'charged' to the AT thrust.
- Other AT experiments to be done toward the end of this campaign include long pulse (3 sec) expts at higher RF power
- A few of the proposed AT experiments require LHCD, and have to be deferred to early FY05 after LH commissioning in late FY04.

# ITER R&D

- Crosses all 4 science areas and 2 thrusts
  - BP thrust primarily focused on ITER
  - AT thrust also directly in support of ITER
  - Most Science/Technology studies in Transport, RF, MHD and Edge highly relevant to ITER

# Upgrade Priorities (driven by program priorities)

- Complete 1<sup>st</sup> phase LH, begin expts
  - Cryopump ( $n_e$  control and collisionality)
  - High energy x-ray spectroscopic imaging
  - Long-pulse DNB
  - CXRS upgrades
- Massive gas-puff hardware (disruption mitigation for high  $P$  plasma)
- W-brush tiles
- Real-time matching (1 antenna)
- Computer DAC upgrades
- 2'nd LH launcher (compound phasing)

# Delayed Upgrades

- New 4-strap antenna (1 year)
- Polarimeter/interferometer (1 year)
- Outer divertor upgrade
- Spare klystron

# Deferred Upgrades

- Add ports to vessel
- Non-thermal ECE
- Laser induced fluorescence
- Li beam polarimeter
- Real-time matching (additional ICRF antennas)
- ICRF cavity conversions (additional 2 MW tunable)
- ICRF power supply replacement
- Second PCI view
- Laser scattering diagnostic
- MSE second view