

# Highlights of Main Issues & Questions Raised: LPO – Part 2

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# W7-X Long Pulses (Marcin Jakubowski)

- Issue: with present ECH power, cannot simultaneously meet reactor requirements of 80% radiated power fraction with divertor heat fluxes up to 5 MW/m<sup>2</sup> -> explore these separately
- Q: What are main limits to operating higher performance & long pulse on Kikuchi diagram?
- A: High performance is transient; need proper grad(n) and grad(T) mid-radius to optimize and pellet injection is expected to help

# LHD – High Density Divertor (Gen Motojima)

- Issue: stellarator divertor density and pressure tends to be low compared to tokamaks, limiting optimization of exhaust
- Ultra-high sub-divertor neutral pressure achieved above density threshold, same as H-mode in AUG
  - Not yet predicted by modeling
  - May solve stellarator exhaust problem
- Q: What is the future of LHD?
- A: Planned shut down, so near term goals include campaign to understand core turbulence
  - Last chance for LHD to contribute to LPO, so experimental proposals welcome

# DIII-D High-Density for High-H & CEI (A. Garofalo)

- Issues: High- $\beta_p$  scenario appears to be only one so far that achieves high H with high  $f_G$  while being tolerant of W
- Q: Can such low- $I_p$  scenarios be confidently extrapolated to reactors?
- Action: will include latest data in CICCLOP database, including  $nT\tau$

# JET – LPO with ILW (Ernesto Lerche)

- Issue: new JET data on Kikuchi plots is limited in performance or duration by administrative or engineering limits.
- Possible action: consider new versions of these plots that indicate such limits, such as normalizing by the machine-specific limits