Recent ARIES-CS Activities and Plans

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Princeton Plasma Physics Laboratory

Recent ARIES-CS Related Activities

- Objective is to perform analysis in the detailed design and optimization of magnetic coils and plasma-facing components
  → more efficient interaction with UCSD engineering group

- We obtained capabilities at UCSD to run coil design codes:

  - NESCOIL: 1. In collaboration with Paul Garabedian
    2. Compute coil topology for input LCMS in vacuum
    3. An interface was created to provide input to Cad drawing of the coil set for the MHH2 configuration

  - COILOPT: 1. In collaboration with L.P. Ku
    2. Optimize coil topology for input LCMS with plasma
    3. Will be used for detailed design of coils
    4. Run in conjunction with COILOPT?

- There are near-future plans to acquire ORBIT-3D capabilities for alpha loss assessment

Future Plans
(subject to change from 12/03 input)

- **Near Future**:
  - Create VMEC equilibrium file for MHH2 (with GA collaboration)
  - Perform coil optimization for MHH2 using VMEC/COILOPT
  - Use ORBIT-3D code to assess alpha particle loss for MHH2
- **Longer Term:**
  - Use VMEC/MFBE and field line tracing to assess thermal and fast alpha heat flux in the design of PFCs
  - Create interface between VMEC equilibrium and EC ray tracing code (UW-Madison) for plasma heating analysis