**National Compact Stellarator Experiment**
**Project Meeting on Physics Design for Good Magnetic Surfaces and Flexibility**
**Princeton Plasma Physics Laboratory, Director's Conference Room**
**September 2-3, 1999**

## Agenda

### Purpose

- Updates on exploratory studies
- Discussion to identify promising approaches
- Sharpen plans as much as possible

### Thursday, September 2, 1999

8:30 Project Overview (G. Neilson)
News, status, developments, calendar, project goals, goals for meeting.

Getting Good Surfaces

9:00 Equilibrium studies with PIES (D. Monticello)
Code status, fixed- and free-boundary NCSX analyses, W7-AS benchmarks, repair strategies for bad surfaces

9:45 Island-fixing explorations (A. Brooks)
Tweaking currents, trim coils, other.

10:15 Break

10:30 Repair strategies for bad surfaces I (J. Hanson)

11:00 Repair strategies for bad surfaces II (A. Boozer)

11:30 Discussion on Getting Good Surfaces
Tool status for fixed- and free-boundary assessments, acceptance criteria for good surfaces, repair strategies for bad surfaces. Plan.

12:30 Lunch

Flexibility & Robustness

1:30 The Case for the QAS Hybrid (P. Garabedian)

2:00 Control Matrix approach & related studies (N. Pomphrey, H. Mynick, et al.)
Sensitivity of physics to shape parameters, dependence on configuration and profiles.

2:45 Quality Matrix approach & related studies (A. Boozer, et al.)
Physics importance of boundary parameters; emphasizing flexibility in the coil design.

3:30 Break

**Thursday, September 2, 1999, cont'd.**

Flexibility, cont'd.

| | |
|---|---|
| 3:45 | Configuration Explorations (Ku, Kessel, Isaev)<br>Higher average elongation (tradeoffs?); profile variations; shape variations. |
| 4:25 | Coil Design Studies (Brooks, Reiersen)<br>Alternate topologies (e.g., dipoles, inboard-outboard split, tilted TF); defining the winding surface; vacuum surface flexibility. |
| 5:05 | Status of M3D calculations of NCSX (H. Strauss) |
| 5:30 | Adjourn |

**Friday, September 3, 1999**

| | |
|---|---|
| 8:30 | Temporary placeholder for overflow from Thursday. |
| 9:00 | Discussion on Flexibility / Robustness<br>What flexibility is needed? What flexibility is possible? What robustness is needed and possible? What approaches look promising? Plan. |
| 10:00 | Break |
| 10:30 | Wrap-Up Session<br>Action Items, Near-term priorities, Work Plans |
| by 12:00 | Adjourn |