Proposed Near Term Configuration Plan (after reference design chosen)

Scrutinize reference design. Tie up loose ends. Identify any problems.

I. Bootstrap current. If magnitude of current larger than we are assuming, kink stability will be a problem.

   A. Resolve discrepancies between codes.
   B. If discrepancies difficult to resolve, establish consensus on reasonable assumption for bootstrap current.
   C. Proposal: Use reactor relevant bootstrap profiles, rather than profiles expected in experiment. Do we have consensus on this?
   D. Investigate effect of varying n and T profiles on self-consistent bootstrap current. What is the range of currents consistent with bootstrap? How small a current is it reasonable for us to use? Is there an optimal choice of the n & T profiles?
   E. Verify self-consistent bootstrap current with p' modification for ballooning. Do things unravel when we decrease p' at edge?

F. Self-consistent bootstrap with reasonable seed current profile. Investigate seed current reduction.

II. Ballooning stability.

A. Resolve ballooning code convergence problems near edge. Convergence studies verify reliability of calculations.
B. Modify p' profile to stabilize ballooning. Resolve issue of handling of resonances.
C. ORNL validation of ballooning stability.

III. Validation of Kink Stability Calculations.

A. Do we need any further convergence studies to confirm Terpsichore kink calculation?
B. Benchmark against CAS3D kink calculations.
C. Benchmarking between Terpsichore pseudoplasma and Green's function approaches. As a first step, the Terpsichore calculation of external kinks using Green's function needs to be fixed. Merkel and Cooper visits will overlap from 4/18 to 5/1, and

they will try to get this working.

IV. Vertical stability.

A. CAS3D benchmarks.
B. Calculate vertical stability.

V. Profile and robustness issues.

A. Kink β limit vs profile and magnitude of current.
B. What profiles are reasonably consistent with transport calculations?
C. What profiles are suggested by stellarator experience?

VI. PIES evaluation of flux surfaces.

A. Evaluate xerror improved current sheets with VMEC plasma currents.
B. Self-consistent plasma currents. Include bootstrap current effects (longer term).