ISSUES FOR THE THEORY PROGRAM JUN 30, 2003

I. PROGRAMMATIC AND MANAGEMENT ISSUES

- Theory groups are spending increasing amount of time writing and reviewing proposals. They have to submit proposals at least once every three years, and are being asked to review proposals the other two. With the peer review procedure, each proposal has at least three reviewers, so an inordinate number of scientists are involved.
- The theory community recognizes the need to keep OFES informed of its progress. However, there should be a reasonable balance of time spent on preparing reports versus time spent doing research. There is concern that the demand for reporting is increasing.
- Presently the proposals are judged by scientific topics. Should there be additional criteria for evaluating proposals from labs/large groups versus smaller groups?
- Theorists' research support is increasing fragmented. This hurts productivity. How can the situation be improved?

II. MEETINGS AND WORKSHOPS

- There are too many meetings, many of which are redundant. They take away the time to do research and the travel costs are impacting the tight budget.
- Even with too many meetings, they are not fulfilling the needs of the broad community

III. INFORMATION AND IDEAS SHARING

- What each group is working on is not widely known, and the information is not easily accessible. This works against attracting students and promoting collaborations.
- The latest theory progress and future plans are not readily transmitted to OFES. As a result, Theory is not impacting DOE decisions at a high level.

IV. COMPUTING RESOURCES

- OASCR/NERSC is not taking on the responsibility of providing non-state-of-the-art computing cycles to the DOE scientific computing users. OFES does not have a strategy either. We need both capability and capacity computing. The latter is falling through the cracks, and it is impacting productivity.
- How can the fusion theory community, including both large and small groups, get the attention of the DOE computer science community and enlist their assistance without providing direct funding?

V. INTERACTIONS WITH EXPERIMENTS

- To establish a strong coupling with experiment, we need to make the theories and codes more realistic, communicate to our experimental colleagues the details of the theories and codes, and work with them

closely to validate theory against experiment. We are making some progress, but a lot more is needed.

VI. CODE BENCHMARKING AND SHARING

- Codes used to be research tools limited only to the developers. More codes are being offer to the user community. This is a positive trend that allows theory funding to be used to address more topics. Significant effort remains to make the code truly reliable.

VII. STIMULATING INNOVATION

- With flat or declining funding, is innovation getting short-changed?

VIII. ATTRACTING AND DEVELOPING YOUNG THEORISTS

- It is difficult to attract students into the field because there is no guaranteed funds to cover several years, and students do not see permanent job opportunities beyond post-doctoral appointments
- There is also a perception that fusion offers few opportunities for fundamental discoveries, unlike other fields of science