Advanced Accelerator Concepts Workshop
June 23-28, 2002
Mandalay Beach Resort, CA

Working Group: Computational Accelerator Physics
Leader: Thomas Antonsen (Univ. of Maryland)

Computational Accelerator Physics - Mission Statement

Numerical simulation has become an integral part of the process of scientific discovery from the investigation of basic physical phenomena to the design and optimization of large systems. The role of the Computational Accelerator Physics working group will be to explore the range of issues where advances in computation can have impact on this field. Sessions will be devoted to the latest advances in:

- Physical understanding discovered through computation
- Models that extend our ability to simulate complicated interactions
- Algorithms that reduce computation time and requirements
- Applications of parallel computation
- Methods of integrated modeling of systems that allow for design and optimization

The group will also focus on important issues that bear on the reliability of codes and the confidence the community can place in their results. These include:

- The predictive value of computational tools.
- Verification and validation, this includes comparisons between different codes and between codes and experiments.

Because computation is important in may aspects of accelerator science it is expected that sessions will be held jointly with other groups.

Tentative topics:

Laser/plasma wake field acceleration
Modeling 3D Accelerator Structures
Dynamics in space charge dominated beams
Proton acceleration in laser produced plasmas
Coherent radiation sources
Particle beam sources