Beam Dynamics: Planned Activities

- Code Development
  - Intrabeam collisions
  - Electron cooling
  - Continued support for IMPACT
  - Continued development of
    - ✔ beam-beam (multi-bunch collisions)
    - ✔ wakefield module (incorporate data from SciDAC EM)
    - ✔ ring modeling capability
  - Map production (BD+EM)
- ISICs, Comp. Sci.
  - Incorporate APDEC/AMR and UPIC into BD code modules
  - Multi-language issues (ex: F90/C++ exp templates)
  - Continued componentization and integration
  - Enhancement of modeling capabilities into design tools

Beam Dynamics: Planned Activities

- Applications
  - Continued Tevatron simulation as per FNAL guidance
  - Other FNAL studies (Booster, …)
  - BNL booster
  - NLC damping rings
  - Electron cooling simulations
- Deployment and support
  - establish code distribution policy
  - code documentation on web site
  - bug tracking
  - training (e.g. USPAS)

Opportunities with new funding

- Strengthen ongoing software infrastructure development
- CSR effects
- If BES supported: light sources

Beam Dynamics: Early Career Researchers

- Ji Qiang (LBNL, full time)
- Andreas Adelmann (LBNL/PSI, full time postdoc)
- Marco Venturini (LBNL starting Feb. 03; 25%)
- G. Fubiani (LBNL BD/AA; 50% student)
- Luis Teodoro (LANL; 25% postdoc)
- N. Angeloff (FNAL; 25% student)
- B. Wilson (UCD Viz; full time student)

Advanced Accelerators: Planned Activities

- Code Development
  - OSIRIS
    - ✔ Impact and field ionization
    - ✔ Load balancing using UPIC
  - OOPIC/VORPAL
    - ✔ Benchmark 3d algorithm
    - ✔ Ensure parallel scaling to 1000s of procs
  - QuickPIC
    - ✔ Full quasi-static eqns
    - ✔ Load balancing using UPIC
    - ✔ Incorporate AMR-based solver

Advanced Accelerators: Planned Activities

- Applications
  - Plasma wakefield simulations
    - ✔ Verify wakefield scaling law
    - ✔ Model E-164
    - ✔ Continuing testing/comparing 2D ionization
    - ✔ Continue comparison of full PIC to quasi-static PIC
    - ✔ Test 3D ionization modules
  - Laser wakefield
    - ✔ 2D an 3D studies of all-optical injection
    - ✔ Studies of a 1 GeV LWFA scheme
    - ✔ 3D study of a SMLWFA expt
  - E-cloud
    - ✔ Extend multi-turn simulations of the CERN SPS