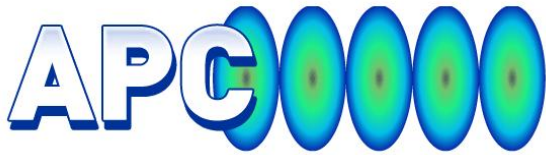


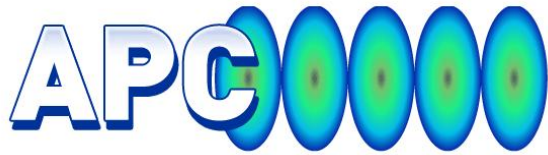
ILC Beam Physics Dept.

Nikolay Solyak



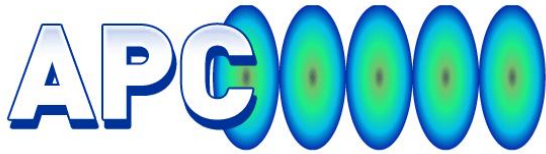
Accomplishments: ILC

- ILC Beam Physics (*FNAL/SLAC/CERN/DESY/KEK/Cornell*)
 - ML Lattice design (A.Valishev)
 - ML “realistic” lattice; Matching to RTML and BDS
 - Static tuning; Emittance growth in ML
 - Effect of dispersion, wakefield and Global Bumps on emittance dilution
 - Dynamic tuning
 - Adaptive alignment technique in presence of errors and GM
 - Developing algorithm and tools for multi-loop feed-back system (LIAR)
 - Short-range Wakefield studies in ILC SRF cavity
 - Effect of asymmetry due to HOM and main couplers
 - RF Kick from accelerating field
 - Ground Motion and vibration studies (J.Volk, Singatulin, P.Lebrun)
 - MINOS hall and the LaFarge mine in North Aurora Illinois
 - Model for FNAL site
 - CHEF code development (*L.Michelotti, F.Ostigui, P.Lebrun*)
 - Study of dark current dynamic and amplification in ILC linac
 - Model of generation dark current in SRF cavity, propagation thru linac



Accomplishments: Other projects

- NML Lattice design and beam dynamics (M.Church)
- Project X
 - Thermoionic e-Gun design for NML;
 - Requirements for phase shifter;
- Muon Collider R&D
 - Study of requirements and SRF specs for different scenario of muon accelerating ring.
- LHC upgrade
 - Crab cavity: Preliminary design of cavity and HOM, LOM damping system. MP analysis, Q-limitations from LHC beam dynamics (collaboration BNL/CERN)



Future plans: FY08 and beyond

- ILC beam physics (limited resources)
 - FB system, bumps studies, AA – conference papers
 - A. Latina RTML 20% (cost reduction); N.Solyak – RTML management
- Generic beam physics R&D
 - Wakefields in HE proton/electron linac and muon collider rings
 - Code development-CHEF: robustness, beam-based emittance preservation algorithms under static/dynamic conditions
- Project X
 - NML Lattice design and beam dynamics (Project X –options)
 - E-gun, phase shifter design
- Muon Collider R&D
 - Wakefield compensation for high charge muon bunches
 - RF reqs for muon bunching and ϕ -E rotation section
 - RF specs for muon colliding ring
- LHC upgrade
 - Crab cavity design
 - Possible collaboration in LHC injector upgrade: linac/ring transfer, SPL
- Ground Motion and Vibrations
 - Rebuilding the LaFarge mine HLS system
 - HLS system (new BUDKER ultra sonic sensors) installation in NML.