LAL activities on ATF2 & ILC - BDS / MDI

DISCUSSION TO PREPARE CONTRIBUTIONS TO EDR

(ongoing, *projected*, considered, completed or ended)

1) Beam-beam modeling (CR, JB, GLM, FT):

GP++, computation efficiency (auto grid sizing, different regimes, parallelization, pair generation,…), *depolarisation*, low mass minijets.

2) Beam-induced backgrounds (OD, ?-IN2P3+L.L.R.):

Photon and neutron backscattering from all extraction lines including impact in detector, taking into account re-scattering on beam-pipe, impact of incoherent pairs lost on BeamCal mask on detector components, impact of SR from upstream and downstream elements.

(*if OD's contract continues in 2008 and if a 2nd IN2P3 scientist, staff or post-doc, can participate*)

3) Evaluation of head-on scheme (JB + C.E.A.):

Losses on electrostatic separators and further downstream. Realistic computations of luminosity deterioration from parasitic crossings.

4) Beam phase-space injected into ATF(2) EXT (CR, JB, MA + I.F.I.C. + C.I.):

Evaluation / improvement of vertical emittance measurement methods in presence of errors. Modeling of non-linearity in shared extraction channel and design of trajectory bumps for control. Stability. Dispersion matching, Commissioning and experimentation at KEK.

5) Pulse-to-pulse feedback at IP in ATF2 (YR):

Ground motion modeling and analysis. Trajectory feedback algorithm. Beam correction modeling and tolerances. *Feedback controller. Long term stability. Commissioning and experimentation at KEK.*

6) Final focusing at ATF2 IP (SB, YR, ?-ANR):

Spot optimisation with reduced tolerances for commissioning and varying IP locations. *Limits and dependencies of final focus local chromaticity correction scheme. Control of optical aberrations. Static and dynamical optical tuning algorithm. Commissioning and experimentation at KEK.*

(*to benefit from a post-doctoral researcher to be hired within the existing ATF2 ANR grant*)

7) 2 mrad scheme (JB, OD, ML, FT, GLM, + C.I.):

Iteration of existing optical design, evaluation of losses and induced backgrounds, preliminary engineering design of standard warm magnets, *beam pipe*, *aspects of integration with detector*.

(*if partner teams with competence on warm and cold magnets are available to contribute*)

8) e-e- option (MA + I.F.I.C.):

Parameter optimization taking into account intra-train feedback. Effect of increased beamstrahlung loss on sharp mass threshold reconstruction. Parameterisation of beam-beam observables with beam parameters.

9) IP Compton lumi / polari-meter (JB,?-EU+ R.H.U.L.):

Feasibility study for different IR geometries. Efficiency of Compton electron extraction behind FD. High power laser specification.

(*may benefit from EU "Marie Curie" ITN funding*)

10) BeamCal (AL, CdT et al., ZZ, ?-IN2P3 + C.E.A.):

Diamond sensor R&D, FE electronics with slow / fast output respectively for full reconstruction and fast feedback, beam parameter reconstruction, veto algorithm for $\gamma\gamma$ events and improvements of SUSY DM searches.

(*if a 2nd IN2P3 scientist, staff or post-doctoral researcher, can participate*)