Matrix of ECFA-BDIR projects → update

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WG on Beam Delivery & Interaction Region
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Context

- Recent technology recommendation
- Join forces → world-wide WGs on BDIR topics
- Strong connections to GDI & WWS

proto-collaboration 1

IPBI – MDI – BDIR

GDI (*machine*)

proto-collaboration 2

Scope

i. Beam delivery design (optics, hardw., instrumentation), correction algorithms (slow, fast), collimation,…

ii. Evaluation & impact of beam-induced det. backgrounds

iii. IR geometry and design (which x-angle, 2-IR issues,…)

iv. Precise energy and polarization measurements

v. Very forward instrumentation $\rightarrow$ luminosity, $\gamma\gamma$ veto,…

vi. Connections to related physics topics & WGs
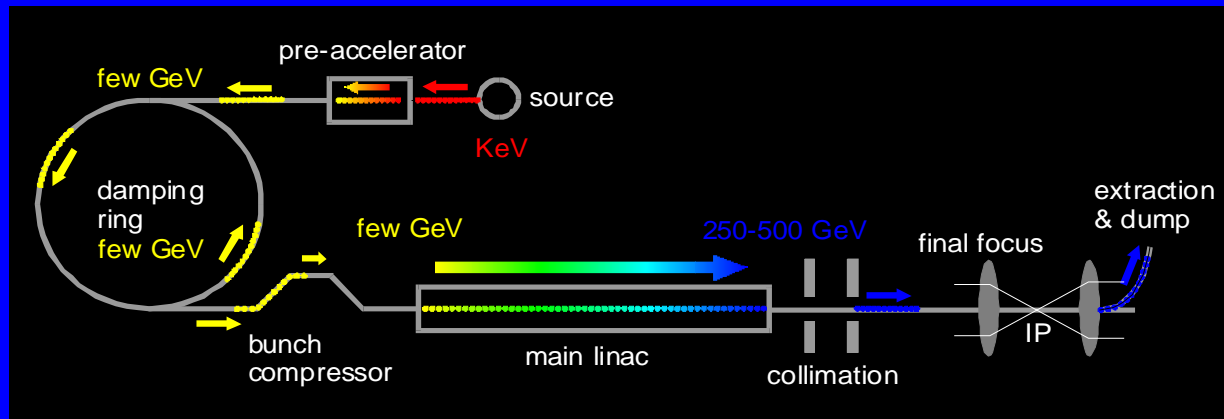
Projects (listed in Montpellier)
http://www-flc.desy.de/bdir/BDIRprojects.html

1. Progress with new FFS optics with local chromatic correction

    D. Angal-Kalinin, Daresbury (O. Napoly, Saclay) ↔ SLAC, KEK

2. Non-linear halo collimation with octupole tail folding

    J. Payet, Saclay (building on work by A. Seryi, SLAC)

3. Masking + beam backgrounds → l*=4.1m optics & θ_c = 20 mrad

    K. Büsser & A. Stahl, DESY ↔ SLAC, KEK

4. Final doublet supports : alignment, stability, adjustment

    N. Meyners & K. Sinram, DESY + ?

5. Revisit & upgrade b-b simulations : pairs, hadrons, polarization

    P. Bambade, LAL (D. Schülte, CERN ↔ EuroTeV)

6. What crossing angle ? Risks + physics for θ_c = 0, 0.6, 2, 7, 20 mrad

    P. Bambade et al., LAL + working group ↔ SLAC, KEK

7. Safe spent beam extraction + diagnostics ($\theta_c = 0, 0.6, 2, 7, 20$ mrad)

    P.B.,LAL, R.Appleby, Daresbury, (V.Ziemann, Uppsala / EuroTeV)

8. 2 IR with similar E, L, B performances, one allowing $\gamma\gamma$ option

    P. B., LAL + more people needed

9. Energy calibration : specs, strategy, methods, physics

    S.Boogert, UCL, J.Schreiber,DESY, F.Poirier, RHUL

10. Polarization : specs, strategy (pre/post-IP), methods, physics

    P.Schüler,DESY,G.Mortgat-Pick,Durham, (F.Zomer,LAL/EuroTeV)

11. Measure & optimise luminosity and backgrounds, feedback loops (Bhabhas, beamstrahlung, pairs, beam-beam deflections, orbits,…)

    A. Stahl et al. DESY, G. White et al. QMUL + ?

12. Beam diagnostics : BPMs (strip-line, final doublet, cavity), laser wire, carbon wire ?, bunch length, "Shintake" interferometer,…

    G. Blair et al., RHUL, J. Schreiber et al. DESY + ? ($\rightarrow$ test beams!)

13. To be completed, compared & merged with similar American and Asian project matrices, taking into account technology rec.

Plan world-wide MDI mini-workshop

- Mid-November in Asia
- Probably just after ACFA LC workshop in Taipei and just before global workshop on machine (GDI kick-off) at KEK (?)

    - beam delivery design, correction strategies and collimation

    - IR design: choice of crossing angle and footprint of machine

    - 2 IRs meeting specs with one allowing future $\gamma\gamma$ upgrade as option

    - extraction line design: spent beam safe extraction + diagnostics

    - IR design: masking + detector background evaluation and impact

    - beam instrumentation, diagnostics, and other special hardware

    - Energy spectrometry and L(E): specification, strategy, methods, physics analyses

    - Polarimetry: specification, upst/down polarimeters and physics analyses

    - Forward instrumentation for beam tuning and physics

    - Beam-beam simulation studies

$\rightarrow$ Feedback on groups / topics $\rightarrow$ Discuss European participation