

Draft proposal:

« Intensity dependent effects at ATF2 »

ATF2 collaboration



- **Motivation:** clear statement about the importance of the intensity dependence effects and global mitigations strategies on ATF2 and implications for ILC and CLIC
- **Proposal of Organizational aspects :**
 - **Chapters:** responsible of collecting the material and contributions and writing the chapter
 - **Reviewers:** some reviewers will be needed
- **Timeline:**
 - First draft end September 2018
 - First revision in November ATF2 Collab meeting 20-22 Nov 2018

Contents

- 1. Introduction to Wakefields (A. Latina)
 - 1.1 Basic formulae
 - 1.2 Effect in the beam
 - Two-particle model
 - 1.3 Orbit
 - 1.4 Beam size

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- 2. Characterization of wakefield sources
(A. Faus-Golfe/K.Kubo)
 - 2.1 Cavity BPMs
 - 2.1.1 Reference Cavity
 - 2.1.2 Others
 - 2.2 Collimator
 - 2.3 Bellows
 - 2.4 Flanges
 - 2.5 OTRs
 - 2.6 Resistive sources

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- 3 Static and dynamic effects at ATF2
 - 3.1 Simulations (P. Korisko)
 - 3.1.1 Static errors: misalignments, spurious multipoles, rolls
 - 3.1.2 Dynamic errors: incoming jitter (position, angle, energy, charge, ...), slow drifts, Shintake monitor
 - 3.2 Measurements (K. Kubo/T.Okugi)
 - 3.2.1 Orbit (bpm resolution, charge dependence)
 - 3.2.2 Jitter
 - 3.2.3 Beam size

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- 4. Global mitigation strategies (P.Korisko/A.Latina)
- 4.1 Tuning procedure
 - 4.1.1 BPM calibration
 - 4.1.2 Orbit-based correction (including DFS, and WFS)
 - 4.1.3 (WFS could be applied with closed collimator)
 - 4.1.4 Wakefield knobs (?)
 - 4.1.5 Linear knobs
 - 4.1.6 Non-linear knobs
- 4.2 Experimental verifications
 - 4.2.1 Check beam orbit robustness
 - 4.2.2 Check beam size

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- 5 Extrapolation to ILC and CLIC (A.Latina/A.Faus-Golfe)
 - 5.1 Identification of relevant wakefield sources at ILC / CLIC (BPMs, collimators, resistive sources)
 - 5.2 Calculation of impacts
 - 5.3 Mitigation strategies
 - 5.4 Estimate tolerances (vs. luminosity loss)

Help is welcome!

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