



LCWS12 International Workshop on
Future Linear Colliders University of Texas at Arlington, USA
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Report from joint CLIC/ILC Working on Damping Rings

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DR working group organisation

- 4 sessions
- 16 presentations (9 in webex)
- Around 10 participants present + 10 in webex
 - Cornell, CERN, PSI-SLS, ESRF, SLAC, KEK-ATF, IFIC-Valencia, Purdue, Australian Synchrotron



Low emittance tuning and instrumentation



- Characterization of ILC DR error tolerance – Jim Shanks (Cornell)
 - Detailed analysis of error tolerances for adequate DA
- Reaching ultra-low emittance at SLS through random walk optimisation – M. Aiba (PSI-SLS)
 - Record vertical emittance $< 1 \text{ pm}$ at SLS
- Low emittance tuning through dispersion free steering – Simone Liuzzo (ESRF)
 - New methods for reaching ultra-low emittance (2 pm @ESRF)
- Low emittance instrumentation in CESR-TA – M. Billing (Cornell)
 - Variety of instruments for reaching low emittance
- Emittance monitor at SLS – N. Milas (PSI-SLS)
 - New monitor based on π -polarisation for resolutions $< 2 \mu \text{ m}$
- Measurements of ultra-low emittances using a vertical undulator – K. Wooton (Australian Synchrotron)
 - New method for resolving ultra-low emittances with vertical undulator

- IBS measurements at CESR/TA – M. Ehrlichman (Cornell)
 - IBS measurements and modeling with different theories and simulations
- IBS measurements at SLS – F. Antoniou (CERN)
 - Conditions for running and measuring IBS at SLS
- Radiation heating from the ILC damping wigglers – L. Boon (Purdue)
 - Detailed analysis of radiation loads in wiggler absorbers



Collective effects and kicker design



- Recent electron cloud studies at CESR-TA – J. Crittenden (Cornell)
 - Detailed cloud build up models including PEY, SEY and cloud dynamics based on RFA measurements
- An accurate model of beam ion instability – L. Wang (SLAC)
 - FII instability modeling for ILC DR (including optics, multi-gas species, space charge force and filling pattern) and measurements in SPEAR-III
- CLIC DR extraction kicker design, manufacturing and experimental program – C. Belver Aguilar (IFIC – Valencia)
 - Strip-line kicker design including impedance issues
- Impedance budget and effect of chamber coating on CLIC DR beam stability (E. Koukovini – Platia)
 - Instability thresholds including multi-layer chamber coating



ATF, PEP-X and the future

- Progress and future of ATF experimental program – J. Urakawa (KEK)
 - Experimental program beyond 2014 to be determined within general KEK roadmap by end of 2012
- PEP-X design and implications with damping rings R&D – Y. Cai (SLAC)
 - Impressively aggressive design with angstrom size emittances
- Dream test facilities for Damping Rings R&D – Y. Papaphilippou (CERN)
 - Explore existing/future low emittance rings parameters for a next generation DR test facility

My personal views...

- ILC and CLIC DR designs although driven by different linac parameters, deal with same issues
 - Unify the two design efforts?
- Very active DR experimental program
 - CESR-TA, SLS, ESRF, ANKA, ATF,...
- Necessity to broaden collaboration beyond DR community
 - Low Emittance Rings' EU network
- Reflect on future test facility for DR R&D, combined with a general LC test facility (bunch compressor, linac, final focus)

