

ACAS – Low emittance tuning simulation for CLIC damping rings

Kent Wootton, Roger Rassool

University of Melbourne

Mark Boland

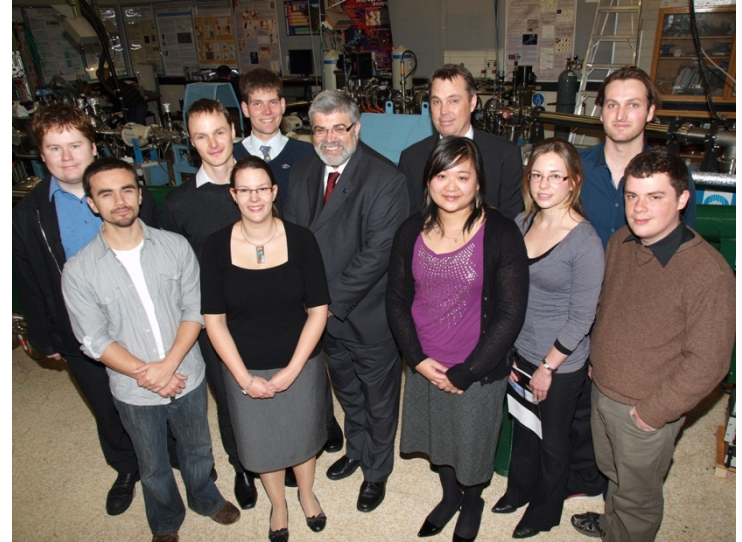
Australian Synchrotron



THE UNIVERSITY OF
MELBOURNE

Australian Collaboration for Accelerator Science

- Founded 2010
 - U. of Melbourne, Australian National U.
 - Australian Synchrotron
 - Australian Nuclear Science and Technology Organisation
- Student projects
- Schools (ACCEL08, ASAP10, ASAP12)
- Workshops (Top-up, EPICS, ACAS10)
- Accelerator research



ACAS – Damping ring studies

Institute	Australian Collaboration for Accelerator Science (ACAS)
Main contacts	M. Boland (Australian Synchrotron) R. Rassool (Uni. of Melbourne)
CERN responsible	Y. Papaphilippou (BE-ABP)
Work package	Damping ring studies (BPH-DR)
Technical subject	Optics design, low emittance tuning
Working arrangement	Frequent visits and common workshops
Funding status	Funded by ACAS up to 2013 2014-16 to be decided
Formal agreement	MoU - CLIC-CTF3 collaboration agreement (Australia : CERN non-member state)

Expected resources

Resource	2012	2013	2014	2015	2016
Material budget [CHF 2011]	-	-	-	-	-
Manpower at institute [FTE years]	0.5	0.5	0.3	0.3	0.3
Manpower at CERN [FTE years]	0.1	0.1	0.1	0.1	0.1

Comments:

- 0.5 PhD until 2013
- 0.3 postdoc fellow until 2016
- 0.1 faculty staff supervision

CLIC Damping Ring

Equilibrium Vertical Emittance

Supervisors:

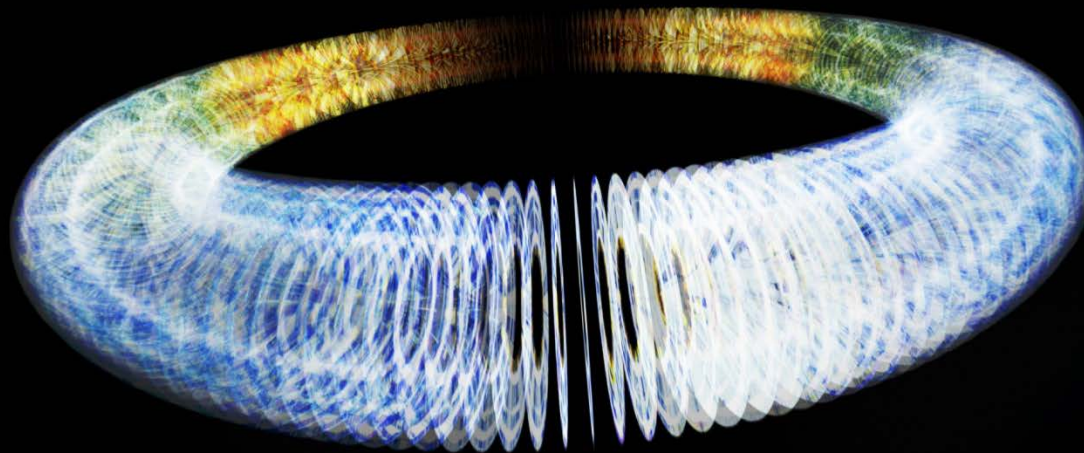
Roger Rassool

Mark Boland

Ioannis Papaphilippou

Kent Wootton

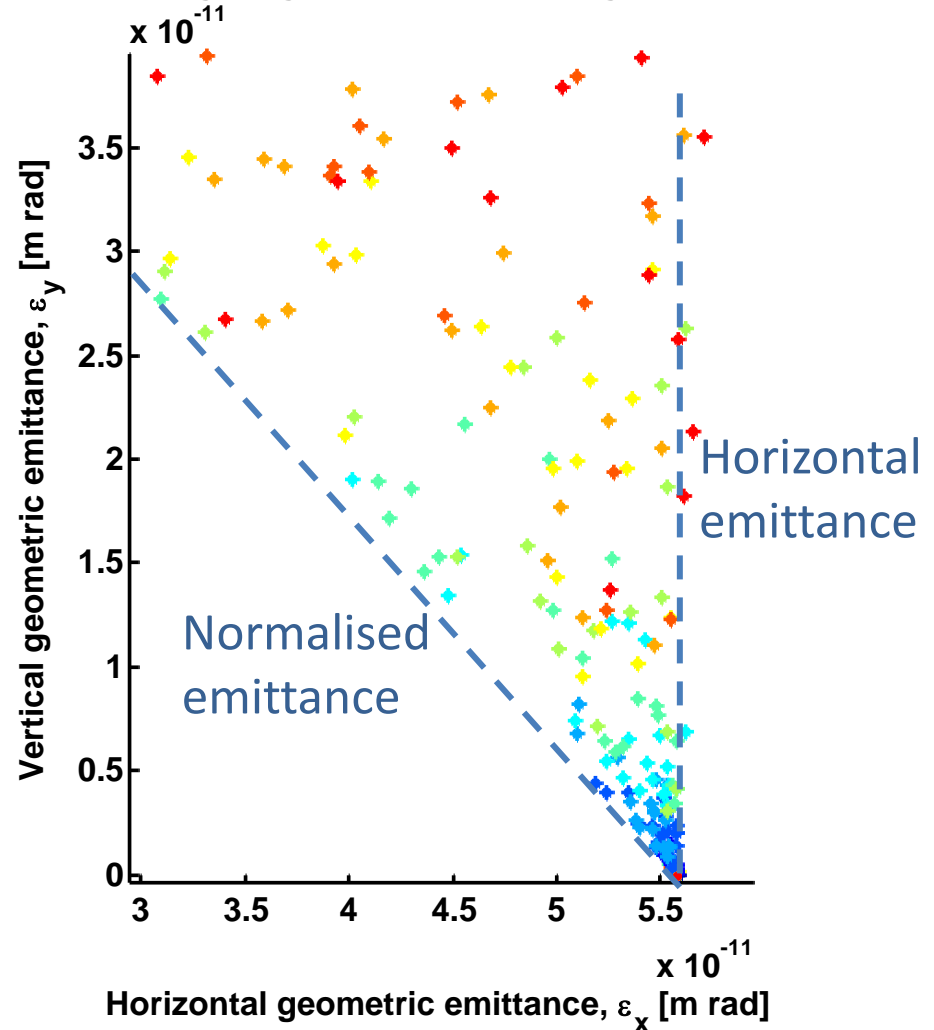
3 November, 2011



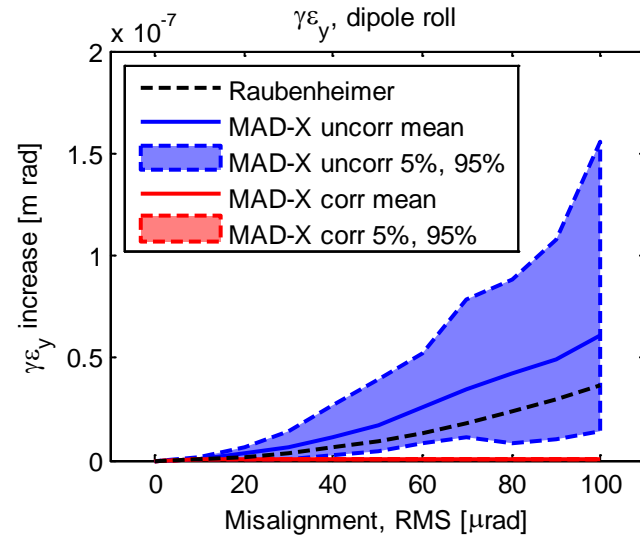
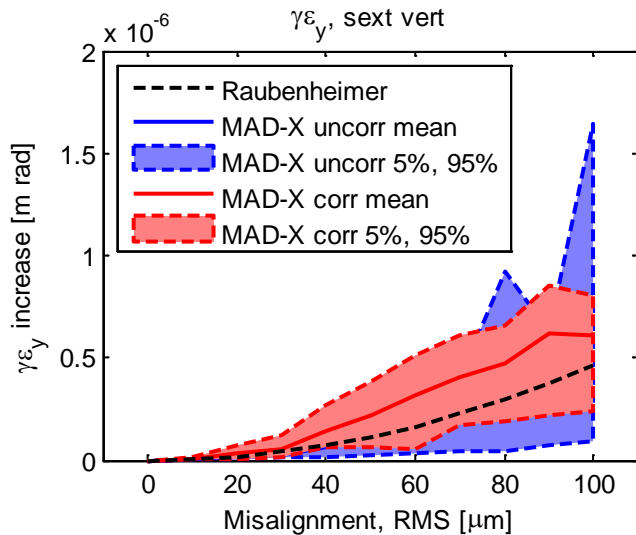
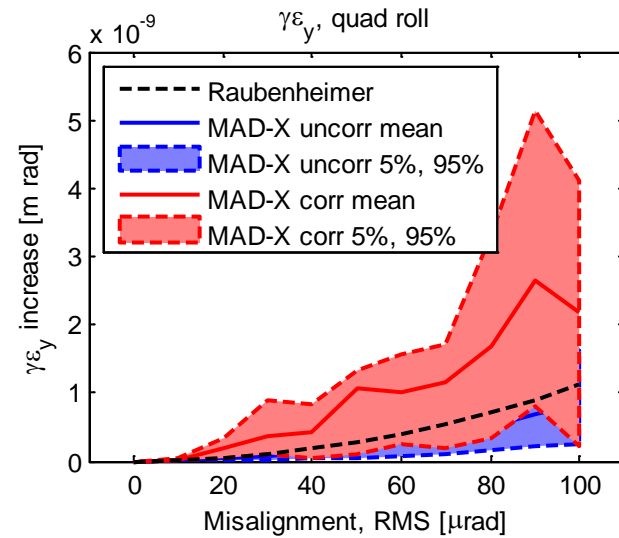
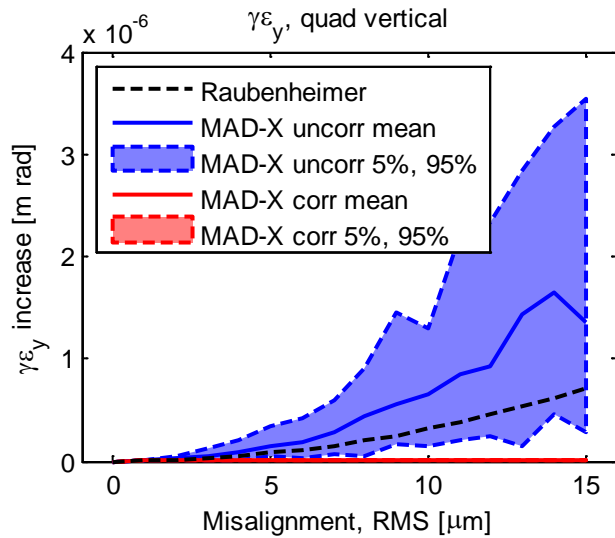
Horizontal emittance

- Horizontal emittance dominated by wigglers
- Vertical emittance dominated by misalignments
 - Optimise for vertical

CLIC Damping Ring - emittances for alignment tolerances



Misalignments for vertical emittance



ASLS experimental studies

- 3.0 GeV, DBA
- Characterise spin and IBS
- Spin resonant depolarisation
- 1.5 GeV (IBS)
- Superconducting wiggler arrives June 2012

