

An aerial night photograph of a large, modern circular stadium. The stadium's roof is illuminated with a blueish-white light. The interior of the stadium is visible, showing a green field and some structures. In the background, a city is lit up at night, and mountains are visible under a dark sky. Light trails from a long-exposure shot are visible across the top of the image.

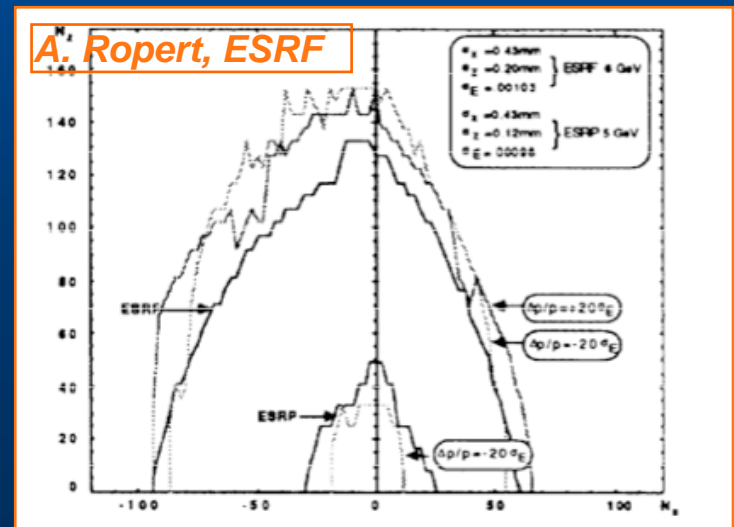
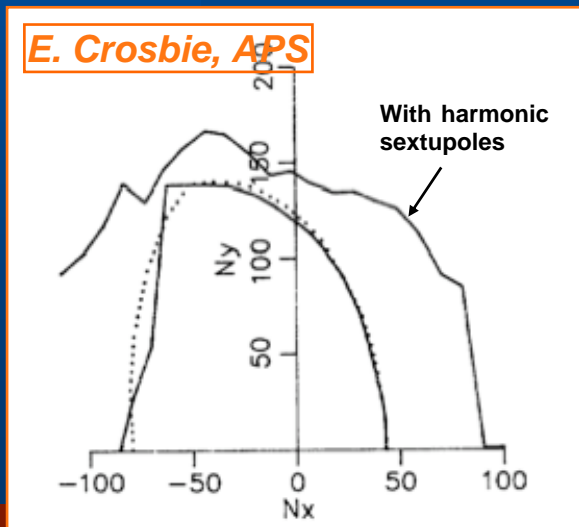
**Welcome to the
Non-Linear Beam Dynamics Workshop**

Grenoble, 26th to 28th May 2008

Non-Linear Beam Dynamics Workshop

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- More than 20 years since the early lattice designs of third generation light sources
- Designs confronted to the challenging issues induced by the very non-linear beam dynamics
- Concept of harmonic sextupoles to compensate for the effects of chromaticity sextupoles



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These first third generation light sources were successfully commissioned and reached their small emittance goals

Since then, even more challenging issues in terms of non-linear effects have emerged with the new sources (Soleil, Diamond, NSLS2...)

Non-linear beam dynamics remains a “hot” topics

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The goal of the workshop is to review:

- **The different approaches to building models of non-linear beam dynamics in Storage Rings**
- **How these models can be matched to experimental results coming from existing Storage Rings**
- **Their capacity to predict global parameters such as lifetime, apertures, tune maps**

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agenda
Monday

09:00 Welcome, *by A Ropert*

09:10 Introduction, *by P Elleaume*

SESSION 1 - MODELING, ANALYTICAL AND NUMERICAL METHODS, CHAIR: Peter KUSKE

09:30 Tools for modeling dynamics apertures, Touschek lifetime and Insertion Devices, *by L Nadolski*

10:00 Non-linear modeling of storage and damping rings using symplectic integrators, *by Y Papaphilippou*

Coffee break

11:00 Canonical perturbation formulation in non-linear dispersion and chromaticity in a circular accelerator, *by M Takao*

11:30 Limitation in modelling tools, *by L Farvacque*

12:00 Model calibration for SSRF, *by H Li*

LUNCH

SESSION 1, contd CHAIR: Laurent FARVACQUE

14:00 The non-linear constraints and solutions in the NSLSII lattice design, *by W Guo*

14:30 Design studies for the 3 GeV MAXIV storage ring, *by E Wallen*

SESSION 2 – EXPERIMENTAL TOOLS CHAIR: Yannis PAPAPHILIPPOU

15:00 Measurement of resonance driving terms in the ATF damping ring, *by R Tomas Garcia*

15:30 Diagnostics for non linear dynamic studies at ESRF, *by E Plouviez*

Coffee break

16:30 Frequency maps at the ESRF, *by L Farvacque*

17:00 DISCUSSION

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Tuesday

SESSION 3 - COMPARISON MODELING / EXPERIMENTS

CHAIR: Andreas STREUN

09:00 Non-linear behaviour of the ESRF lattice: a few puzzling points, *by A Ropert*

09:30 Calibration of the non-linear ring model at Diamond, *by R Bartolini*

Coffee break

10:30 Comparing the measured and designed performance of the Diamond storage ring, *by I Martin*

11:00 Comparison between modeling and reality at SOLEIL: beam transverse dynamics, apertures, *by L Nadolski*

11:30 LHC on-line model, *by F Schmidt*

12:00 DISCUSSION

LUNCH

SESSION 4 - APERTURES AND LIFETIME

CHAIR: Riccardo BARTOLINI

14:00 Search for non-linear causes of lifetime reduction at the APS storage ring, *by L Emery*

14:30 Overview of lifetime issues at the ESRF, *by A Ropert*

15:00 Touschek lifetime and higher order multipole requirements for NSLS-II, *by B Nash*

Coffee break

16:00 Apertures of the BESSY storage ring, *by P Kuske*

16:30 Acceptance and beam lifetime at the SLS, *by A Streun*

17:00 DISCUSSION **CHAIR: Dieter EINFELD**

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Wednesday

SESSION 5 - INJECTION AND LOSSES

CHAIR: Laurent NADOLSKI

- 09:00 Injection efficiency, Impact of IDs on the horizontal beam dynamics, *by P Kuske*
- 09:30 On injection beam losses at the SPring-8 storage ring, *by M Takao*
- 10:00 SPEAR3: lifetime, dynamic aperture and frequency map, *by X Huang*

Coffee break

11:00 CONCLUSION & REPORTS FROM THE CHAIRMEN

CHAIR: Pascal ELLEAUME

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PARTICIPATION

37 participants,

16 laboratories,

10 countries from all over the world

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Lunches on site in the canteen

External participants: Please wear your 'workshop' badge so that the cashier can register your lunch.

ESRF participants: use your card !

Internet Access Area (mail)

Beside the auditorium (follow signs)

Free Access PC on the ground floor, CTB 088

Luggage can be left in room 309 (ask Philippa – 2173)

Dinner on Monday – La Corne d'Or, Corenc – 04.3886 6236

18:45 bus at the Guest House

19:00 stop at the railway station

Return around 22:30

Contact people: Anne Dély (20.49), Philippa Gaget (21.73)