

Preparation of 2nd HarmonLIP Workshop

→ ESRF / Grenoble, 18-20 March 2024

Jörn Jacob, ESRF

Lab	Storage Ring
CELLS	ALBA I & II
DESY	PETRA IV
DIAMOND	DLS II
Elettra	I & II
ESRF	EBS
HZB	BESSY II & III
HZB	MLS I & II
LNLS	Sirius

Lab	Storage Ring
ISA	Astrid II
KEK	PF
MAX IV	3 GeV ring
MAX IV	1.5 GeV ring
PSI	SLS I & II
SOLARIS	I
SOLEIL	SOLEIL-U

Harmonic RF systems implemented or under study on some 3rd generation and for all 4th generation SR based synchrotron light sources – essentially for **bunch lengthening** – in some cases also for Landau damping – exceptionally bunch shortening. HarmonLIP'2022 : mostly European labs

Harmonic RF systems

- In particular for 4th generation light sources to minimize Touschek scattering, achieve acceptable lifetime and minimize radiation damages
- Alleviate IBS and subsequent emittance blow up
- Limit impedance heating of vacuum vessels at high currents per bunch
- Limit microwave instability and energy blow up
- In some cases used for Landau damping of CBI

HarmonLIP – Leaps Internal Project, initiated by Pedro Tavares / MAX IV in 2022

Provide a platform to share experience and findings for the implementation of harmonic RF systems, essentially but not only at the European level:

- Exchange on various design approaches for NC or SC, active or passive harmonic cavities
- Share simulations and measurements to benchmark particle tracking codes and analytic computations
- Seeding new collaborations

1st extremely fruitful HarmonLIP meeting at MAX IV on 10-12 October 2022

- 50 participants
- Decision to have a **follow up** meeting with **updates** and **new findings** after 1.5 years

⇒ 2nd HarmonLIP meeting at the ESRF on 18-20 March 2024 / similar frame

- Local organizing committee: harmonlip2024-loc@esrf.fr

Anticipated Timing:

- Mon 18 March 2024 17h00 Reception
- Tue 19 March 2024 9:00 – 18:00: Sessions 1 and 2, Lunch break at 13:00 -14:00
19:30: Dinner
- Wed 20 March 2024 9:00 – 13:00: Session 3, Lunch at 13h00

Preliminary agenda:

Session 1 - Project Status

- Brief status reports from the different labs, limited to summarizing developments and achievements since the last HarmonLIP meeting.

Session 2 - Beam Dynamics

- A session dedicated to beam dynamics simulations and measurements addressing stability issues in the presence of a harmonic RF system.

Session 3 - Engineering and Diagnostics

- Status of recent hardware developments and tests