

# BEAM STABILITY WORKSHOP: SUMMARY



**JOHN BYRD**

Director, Accelerator Systems Division  
**Advanced Photon Source**

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# THANKS FOR EVERYTHING, BOB!

Everything changes in beam stability.....except the mustache



Robert  
Hettel



# WORKSHOP AGENDA

08:10 - 08:45	Christoph Steier: Beam Stability Requirements for 4th Generation Synchrotron Light Sources Based on MBA Lattices
08:45 - 09:20	Vadim Sajaev: Comprehensive Study of the Expected Orbit Motion in the APS-U Storage Ring
09:20 - 9:55	Franz-Josef Decker: Timing and Phase Jitter Creating Energy, Transverse and Intensity Jitter at LCLS
09:55 - 10:10	Break
10:15 - 10:50	James Safranek: SPEAR3 Photon Beamline Stability from Ground Motion and Injection Transients
10:50 - 11:25	Xianbo Shi: X-ray Optics and Photon Beam Stability Measurements at the APS
11:25 - 12:00	Petr Ilinski: Progress of Photon Beam Stability Improvements at NSLS-II Hard X-ray Nanoprobe Beamline
12:00 - 13:00	Working Lunch - Bob Hettel: Beam Stability - Past, Present and Future
13:00 - 13:35	Yuke Tian: NSLS-II Fast Orbit Feedback System
13:35 - 14:10	Xiaobiao Huang: Fast Orbit Feedback and Beamline Dynamic Steering for SPEAR3
14:10 - 14:45	Nick Sereno: Fast Orbit Feedback at the APS
14:45 - 15:00	Break
15:00 - 15:35	Greg Portmann: Experience at the ALS with Design, Commissioning and Operations of the BNL/LBNL RF-BPM with Pilot Tones and Cell Controller Electronics
15:35 - 16:10	Boris Podobedov: Beam Dynamics Measurements with New Generation BPMs
16:10 - 16:45	Fernando Sannibale: Compensation of Emittance and Beam Size Variations Induced by Insertion Devices

Only 2 beamline talks



We need better diversity and inclusion for this underrepresented group.

# PERSONAL IMPRESSIONS

- Electron beam orbit stability is highly advanced in both modeling, technology and implementation
  - Almost complete understanding of sources and effect on beam
  - Technology for FOFB is advancing rapidly with the amazing advances in FPGAs. More room for algorithm development....
  - Control of accelerator utilities (heat, air, power, water....) all understood. More room for improvements but expensive to accommodate for existing facilities.
- Several approaches to BPM electronics and FOFB. All rings have very similar problems and should combine forces and try to keep material as open source as possible. This is a strong driver for international collaboration on this topic (including China!)
- Quantitative understanding of beamline stability is less developed. Initial analysis at APS is promising. Beamline feedbacks at NSLS2 are critical, especially for long beamlines. No uniform approach for BFB in use. Nobody seems to be in universally in charge. This is a potentially strong driver for community collaboration.

# WHAT NEXT? HOW DO WE ORGANIZE FUTURE BSW?

## What is the best forum for moving forward?

- Many of the topics today are covered separated in other workshops/conferences
  - IPAC, IBIC, LLRF, ....(accelerator)
  - SRI, MEDSI, etc. (beamlines)
- The DLSR seems to be the ideal forum with both accelerator and beamline folks attending.
  - International conference which allows open attendance (except for US)
  - Roughly yearly frequency.
- I propose the next BSW be held as a one-day workshop sometime at Argonne in Fall 2019.

**Thanks to everyone for a highly interesting and interactive workshop**  
**Safe travels and see you next time!**