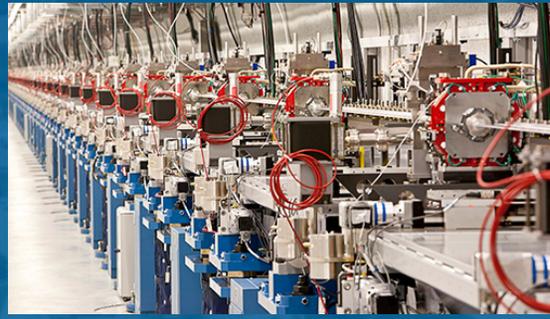


23 APRIL 2018



# *PLANS FOR LIGHT SOURCES BEAM STABILITY WORKSHOP*



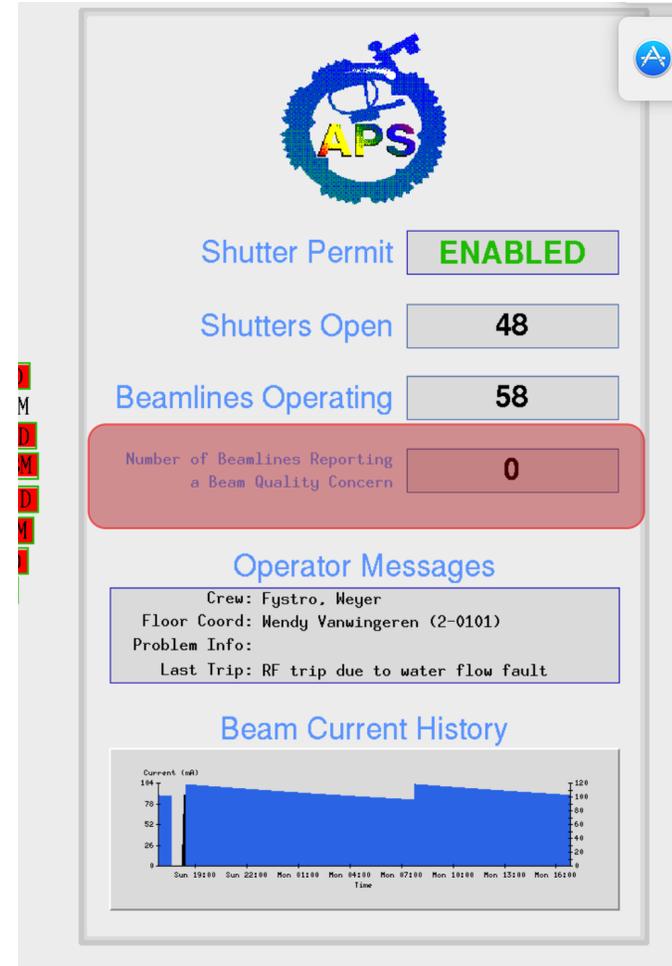
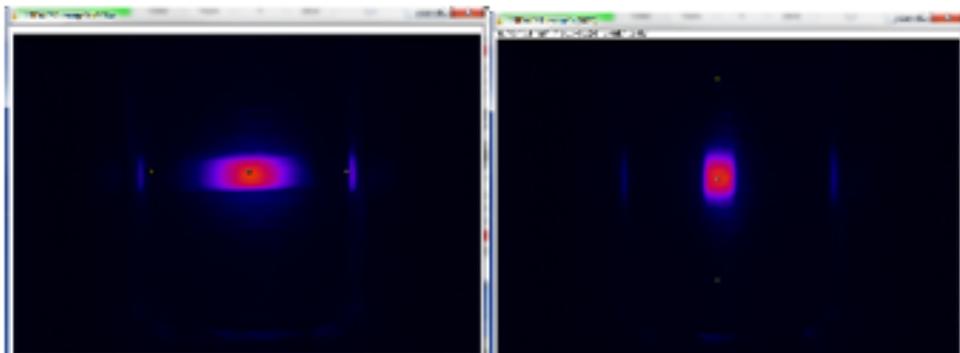
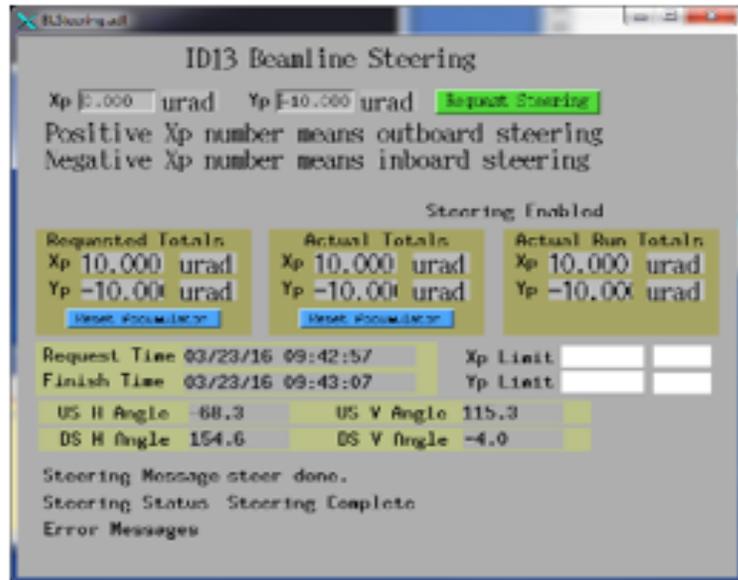
**GEORGE SRAJER**

**ON BEHALF OF THE BEAM STABILITY  
WORKING GROUP ORGANIZING COMMITTEE**

**5-WAY MEETING, BERKELEY LAB**

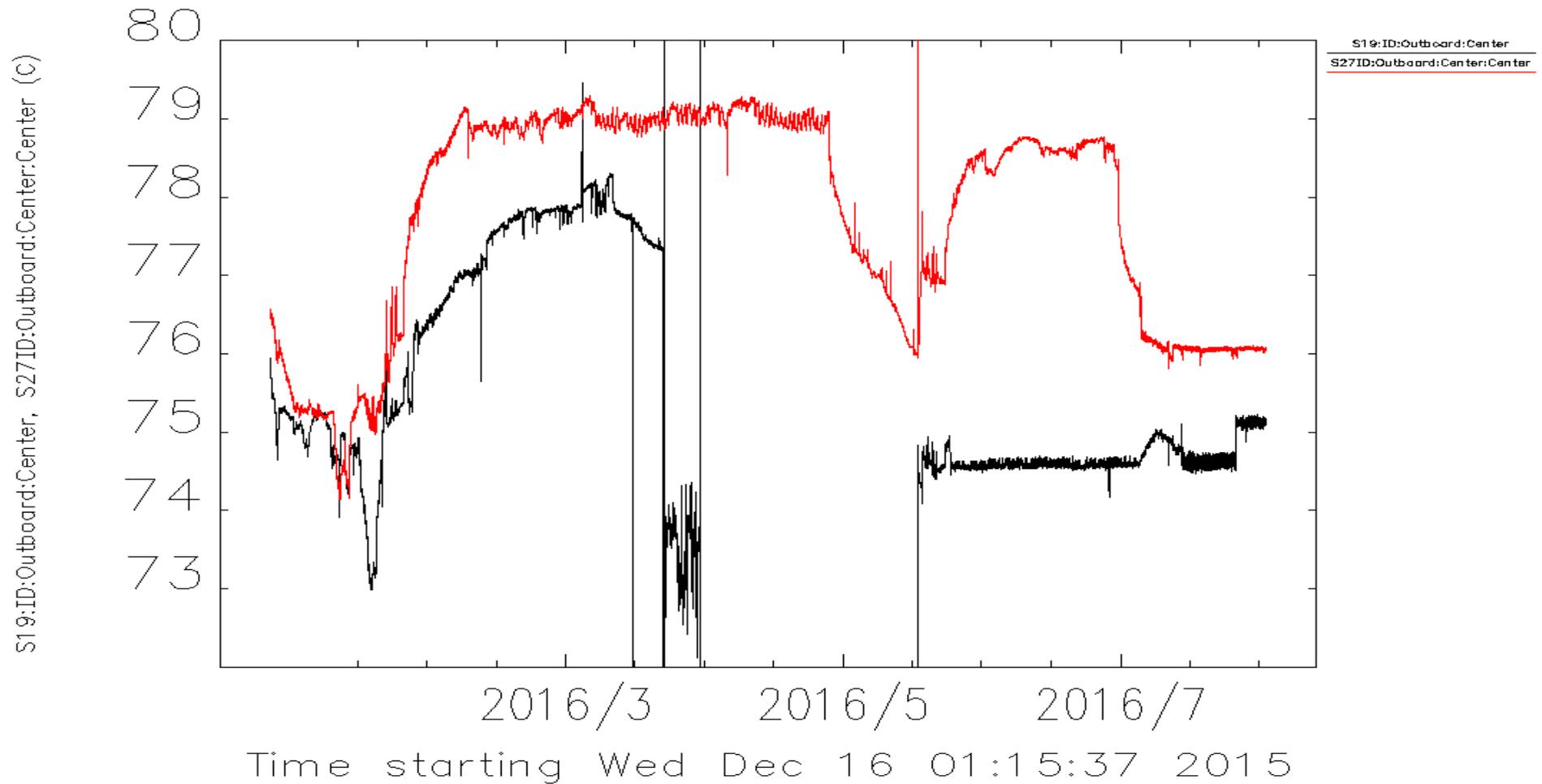
# BACKGROUND

- There are many common challenges in the area of particle and x-ray beam stability
- Most facilities have embarked on addressing their specific issues
- APS established the Beam Stability Working Group on March 31, 2015
- Very positive interaction between accelerator and beamlines scientists



# ANOTHER EXAMPLE FROM APS

- Tunnel temperature improvements
- Goal:  $\pm 0.1$  °F over 1 week already met APS Upgrade requirements



**Agenda**  
***Electron and X-Ray Beam Stability Review***  
**Thursday, January 18, 2018 Brookhaven National**  
**Laboratory**  
**NSLS-11, Bldg. 744**

<b>8:30 - 8:40</b>	<b>Welcome</b>	
<b>8:40 - 9:20</b>	<b>Requirements on Structural Stability Reflected In Design Guidelines for Machine Enclosures and Girders</b>	<b>Sushil Sharma</b>
<hr/>		
<b>9:20 - 10:00</b>	<b>Analysis of Vibrations at NSLS-11</b>	<b>Charles Spataro</b>
<b>10:00 - 10:40</b>	<b>Electrical Noises in the NSLS-11 Machine and Experimental Environment</b>	<b>George Ganetis</b>
<b>10:40 - 11:00</b>	<i>Coffee Break (sponsored by BSA)</i>	
<b>11:00 - 11:40</b>	<b>Operational Improvements in the Area of Beam Stability</b>	<b>Guimei Wang</b>
<b>11:40 - 12:20</b>	<b>Fast Orbit Feedback and Local Feedbacks: History, Status and Plans</b>	<b>Yuke Tian</b>
<b>12:20 - 13:15</b>	<i>Lunch (sponsored by BSA)</i>	
<b>13:15 - 13:55</b>	<b>New Developments in the Area of RF and X-BPMs</b>	<b>Danny Padrazo</b>
<b>13:55 - 14:35</b>	<b>Techniques for Controlling and Stabilizing Beam Size in NSLS-11 Operations</b>	<b>Yoshi Hidaka</b>
<b>14:35 - 15:15</b>	<b>Current Situation with Beam Stability from the Beamline Perspective</b>	<b>Boris Podobedov</b>
<b>15:15 - 15:35</b>	<i>Coffee Break (sponsored by BSA)</i>	
<b>15:35 - 16:15</b>	<b>Future Flagship User Experiments at NSLS-11 and Corresponding Requirements on the Beam Stability</b>	<b>Paul Zschack</b>
<b>16:15 - 17:30</b>	<b>Discussions</b>	
<b>17:30 - 19:00</b>	<i>Dinner (sponsored by BSA)</i>	

- This review at NSLS-II provided an opportunity to identify common issues, and possibly establish areas of future collaboration

# BEAM STABILITY WORKSHOP ACTIVITIES

- Inaugural conference call held on March 16
  - Topics, goals and organizing committee skeleton discussed
  - Communications continued via e-mail
- Subsequently, the following members of the Organizing Committee identified:
  - Simon Morton (ALS)
  - Fernando Sannibale (ALS)
  - Axel Brachmann (LCLS)
  - John Schmerge (LCLS)
  - Bryce Jacobson (LCLS)
  - Timur Shaftan (NSLS-II)
  - Paul Zschack (NSLS-II)
  - Xiaobiao Huang (SSRL)
  - James Safranek (SSRL)
  - John Byrd (APS)
  - George Srajer (APS)

# PROPOSED FRAMEWORK

- Ideally, balanced approach

## **Morning: Plenary Session**

- Each facility to present an overview of their current activities and future plans; Possible presentation guidelines:
  - Impact and user feedback, lessons-learned, most challenging/stubborn topic solve;

## **Afternoon: Short presentations on facility-prioritized topics such as:**

- Feedback system, mechanical, temperature, electronic, particle beam, photon beam stability, algorithms, etc.
  - The goal here is to provide a forum for further in-depth discussions that could lead to common areas of collaborations that could benefit Light Sources

# PROPOSED GENERIC AGENDA

08:00 - 08:10 Welcome and Workshop Goals

08:10 - 08:55 Advanced Light Source

08:55 – 09:40 Advanced Photon Source

*09:45 – 10:00 Break*

10:00 – 10:45 LCLS

10:45 – 11:30 NSLS-II

11:30 – 12:15 SSRL

*12:15 – 13:15 Working lunch*

13:30 – 15:30 Each facility will have 20 min to select 2-3 local “hot” topics

15:30 – 15:45 Break

15:45 – 16:30 Discussion

- Identify common areas of collaborative interests

# PROPOSED TOPICS AND SPEAKERS SO FAR

## SSRL:

- X. Huang, Beamline dynamic steering and mirror pitch feedback
- J. Safranek, SPEAR3 tunnel floor motion characterization and mitigation
- J. Safranek, Top-off transient reduction
- K. Tian, In-vacuum undulator instability characterization and mitigation

## NSLS-II

- Y. Tian, Global Fast Orbit Feedback and Local Feedbacks at NSLS-II: History, Status, and Plans
- B. Podobedov, Summary from the recent Electron and X-ray Beam Stability review at NSLS-II
- D. Padrazo, Update on Development and Comparative Study of zDFE-RFBPM at NSLS-II
- K. Ha, Experience with design, commissioning and operations of the RF-BPM, X-BPM and Cell Controller electronics

# PATH FORWARD

1. Endorsement by Facilities
2. Selection of host; decision on location and time
3. Development of a real agenda/web page
4. Decision on other logistics