



# ICALEPCS 2015

International Conference on Accelerator  
& Large Experimental Physics  
Control Systems

## **4<sup>th</sup> workshop dedicated to MOtion Control Applications in large Facilities**

Brian Nutter ( DLS), Yves-Marie Abiven ( SOLEIL) ,  
Guifre Cuni (ALBA), Nader Afshar (Australian  
Synchrotron), Paul Barron ( ESS), Shu Zhang  
(SOLEIL)



# ICALEPCS 2015

International Conference on Accelerator  
& Large Experimental Physics  
Control Systems

## Workshop overview

Motion control is a **key element**, which enables high levels of performance at scientific facilities

MOCRAF 2015 aimed to discuss

Experiences in motion control at the different sites

Technical solutions in software and hardware

Motion control challenges



# ICALEPCS 2015

International Conference on Accelerator  
& Large Experimental Physics  
Control Systems

## Workshop overview

→56 attendees

→26 countries

→16 Institutes

→4 trading companies





# ICALEPCS 2015

International Conference on Accelerator  
& Large Experimental Physics  
Control Systems

## **Workshop program**

Short talk of 3 minutes by 18 participants

10 minutes technical talk + 2 minutes of  
question

**Finally a round table discussion of immediate  
concerns**



# ICALEPCS 2015

International Conference on Accelerator  
& Large Experimental Physics  
Control Systems

## Workshop program

09:05	Morning session 1	short presentations (3 minutes)	Chair: Yves-Marie Abiven	speaker	Timekeeper
		1 Australian Synchrotron		Pierfranco Valitutti	<b>Paul Barron</b>
		2 BINP SB RAS		Dmitry Bolkhovityanov	
		3 Brookhaven National Laboratory		Wayne Lewis	
		4 CELLS-ALBA		Guifre Cuni	
		6 CNPEM - Brazilian Synchrotron Light Laboratory		Gabriel Moreno	
		7 Diamond Light Source		Brian Nutter	
		8 ESRF		Nicolas Janvier	
		9 ESS		Thomas Gahl	
		10 European XFEL GmbH		Nicola Coppola	
		12 Paul Scherrer Institute		Dragutin Maier-Manojlovic	
		14 SLAC		Shawn Alverson	
		15 Synchrotron SOLEIL		Yves-Marie Abiven	
		16 Meerkat telescope		Lance Williams	
		17 Beckoff		Nils Burandt	
		11 Helmholtz-Zentrum Berlin		Ervis Suljoti	
		12 SESAME		Ibrahim Saleh	
		5 Chinese Academy of Science		Peng Li	
		18 CosyLab		Miroslav Pavleski	
<b>10h30</b>					

16 institutes and 2 companies introduced themselves, their motion control environment and raised questions for the group



# ICALEPCS 2015

International Conference on Accelerator  
& Large Experimental Physics  
Control Systems

## Workshop program

11H	Morning Session 2	Status Updates (10+2 minutes)	Chair: Guifre Cuni	speaker	Timekeeper
	1	REVOLUTION status	SOLEIL	Shu Zhang	<b>Brian Nutter</b>
	2	Motion Control at NSLS-II	NSLS-II	Wayne Lewis	
	3	status of sesame	SESAME	Yazeed Momani	
	4	Motion control challenges at ELI	ELI	Naylon Jack alexander	
	5	what we are doing which is a mix of old and new	CLS	Glen Wright	
	6	overview of motion control on the KAT-7 and MeerKAT	Meerkat telescope	Lance Williams	
12H30	7				
<i>Lunch</i>					

During the updates we heard about the conclusion of Soleil's motor controller evaluation program. We heard about the new light sources NSLSII, and Sesame and the mature source CLS. We were introduced to the laser facility under construction ELI and the telescope project MeerKAT.



# ICALEPCS 2015

International Conference on Accelerator  
& Large Experimental Physics  
Control Systems

## Workshop program

13H30	Afternoon session 1	Applications/Hardware (10+2 minutes)	Chair: Paul Barron	speaker	Timekeeper
		1 management of motion control in large scale system	European Xfel	Suren Karabekyan	Guifre Cuni
		2 IcePap	ESRF	Nicolas Janvier	
		3 Complex Kinematics and superimposed Motion	PSI	Dragutin Maier-Manojlovic	
		4 Motion control with fail safe requirements	Forschungszentrum Juelich	Harald Kleines	
		5 Challenges to Control and Innovative Scanning X-Ray Nanoprobe	SOLEIL	Christer Engblom	
		6 "Panda" motion project, collaboration SOLEIL and Diamond	SOLEIL/DIAMOND	Y-M Abiven /I Uzun	
15h		7			

During the hardware session we learned that ICEPAP can now do coordinated multi axis interpolation. We saw how fail safe motion permits are being used at a neutron scattering instrument with safety related PLC modules. We gained an insight into the motion challenges required to implement nanometre precision positioning stages and we were introduced to the hardware collaboration between Soleil and Diamond Light source in designing a FPGA solution to position capture and detector triggering in continuous scanning applications



# ICALEPCS 2015

International Conference on Accelerator  
& Large Experimental Physics  
Control Systems

## Workshop program

15h30	Afternoon session 2	Software (10 +2 minutes)	Chair: Brian Nutter	speaker	TimeKeeper
	1	adaptive control of scanner	Aus synch	Nader Asfer	Yves-Marie Abiven
	2	Prototyping a fast shutter system using adaptive controls	ESS	Paul barron	
	3	continuous mode scan	HelmHolz zentrum	Ervis suljoti	
	4	First steps with fly scans in brazilian synchrotron	LNLS	Henrique de almeida	
	5	Iterative development of the generic continuous scan in SARDANA	ALBA	Zbigniew Reszela	
	6	An EPICS solution that can provide a comprehensive, and high performance motor control system for use at synchrotrons and other research laboratories	Aus synch	Mark Clift	
17H	7	<b>Round table</b>			

During the software session we learned about the Australian Synchrotron's experiments in reducing velocity ripple of low speed motorised axes. We learned about timing requirements between motorised shutters and chopper systems at ESS and saw videos of optimised reciprocating motion simulating the shutter. 4 facilities presented their current work on synchronised motion between different motion systems, all aimed at increasing accuracy and throughput of experimental data collections.

This topic dominated the ensuing round table discussion.





# ICALEPCS 2015

International Conference on Accelerator  
& Large Experimental Physics  
Control Systems

## **Workshop program**

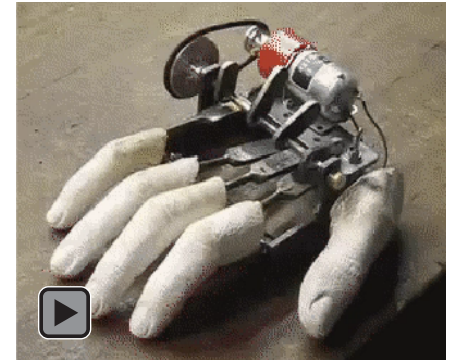
Presentations from this  
years workshop will be  
available via Synchrotron  
Soleil web site along with  
those from previous  
workshops



# ICALEPCS 2015

International Conference on Accelerator  
& Large Experimental Physics  
Control Systems

## Conclusion



- **What was achieved?** A very useful exchange of experiences, ideas and recommendations.

The workshop went on until 6:30 and nearly 50 participants stayed until the end.

- **What next?** As a community we need to decide upon the best way to exchange ideas and information on a more regular basis. We need to look at the format for future workshops and if we need to create more space dedicated to free discussions with fewer formal presentations .