

Working Group on: High Power Proton Accelerators

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U.K.-U.S. Proton Accelerators for
Science and Innovation Workshop
January 12-14, 2012



Working Group Goals

- Definitions:
 - High power = >1 MW beam power
 - Proton accelerator =
 - Ion sources (p, H-)
 - Accelerators (linac, synchrotron, FFAG, storage ring)
 - Goals/deliverables
 - Familiarize participants with activities and future plans for high power proton accelerators in the U.S. and U. K.
 - Explore opportunities for collaboration/cooperation/coordination
 - Deliverable = list of such opportunities for followup
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Working Group Organization

- Oriented around facilities and technologies
 - Operational experience at existing facilities (ISIS, SNS)
 - Test/demonstration facilities in the planning stage
 - Ion source development activities
 - Novel approaches to high intensity acceleration
 - Supporting technologies
 - Future high power facilities in the development stage
 - Simulations in support of the above



What are we going to talk about?

- Near Term (<2020)
 - Experience at existing facilities/short term improvements: SNS, ISIS
 - Test Facilities: PXIE/FETS
 - Technology development: SRF, instrumentation
 - Computing/simulations: beam dynamics, energy deposition, collimation
 - Novel approaches to acceleration: FFAG, Integrable optics
- Long Term (>2020)
 - High Power Facilities: Project X, ISIS upgrades, Proton Driver



Working Group Agenda

- Seven 45 minutes sessions on Friday
 - 15' each from the UK and US
 - 15' discussion
- Parallel discussion sessions late Friday (120')
- Full WG discussion, and preparation for report, on Saturday morning (180')



Working Group Agenda

Friday, January 13		
09:00 – 09:15	Introduction – Steve Holmes and John Thomason	
	Test Facilities	
09:15 – 09:30	FETS Overview	Alan Letchford
09:30 – 09:45	PXIE Test Facility	Sergei Nagaitsev
09:45 – 10:00	Discussion	
	High Power Accelerators/Operational Experience and Upgrades	
10:00 – 10:15	The ISIS Facility	John Thomason
10:15 – 10:30	SNS	Mike Plum
10:30 – 10:45	Discussion	
10:45 – 11:15	Coffee break	
	H⁻ Source Development	
11:15 – 11:30	H ⁻ Ion Source Development at RAL	Dan Faircloth (TBC)
11:30 – 11:45	H ⁻ Source Development at FNAL	Dan Bollinger
11:45 – 12:00	Discussion	
	Novel Approaches to High Power Proton Acceleration	
12:00 – 12:15	Integrable Optics Test Accelerator	Alexander Valishev
12:15 – 12:30	Discussion (including Shinji Machida's talk "The EMMA Experiment" from plenary session)	
12:30 – 13:15	Lunch	



Working Group Agenda

Friday, January 13		
Supporting Technologies		
13:15 – 13:30	Novel Diagnostics on FETS and ISIS	Jürgen Pozimski
13:30 – 13:45	SRF Development at Fermilab	Bob Kephart
13:45 – 14:00	Discussion	
Future Facilities		
14:00 – 14:15	Proton Driver Development at RAL	John Thomason
14:15 – 14:30	Project X	Steve Holmes
14:30 – 14:45	Discussion	
Simulations		
14:45 – 15:00	Code Development and Simulation Studies for High Power Machines	Shinji Machida
15:00 – 15:15	Simulation activities at Fermilab	Vladimir Shiltsev
15:15 – 15:30	Discussion	
15:30 – 16:00	Coffee break	
16:00 – 18:00	Parallel Discussion Sessions	



Working Group Agenda

Saturday, January 14	
09:00-11:00	Discussion of Collaborative Opportunities
11:00-11:30	Coffee break
11:30-12:30	Preparation of Working Group Summary