

Welcome

Stuart Henderson

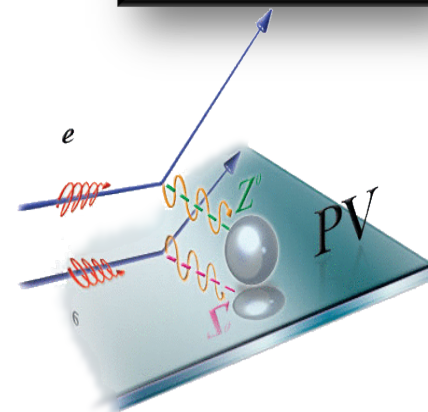
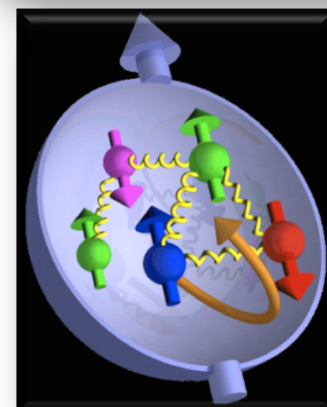
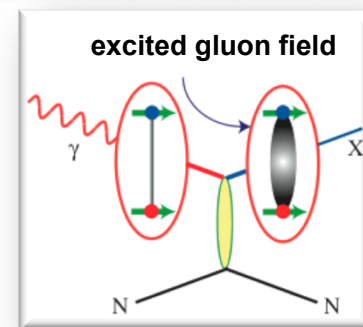
April 28, 2017

USQCD and Jefferson Lab Program

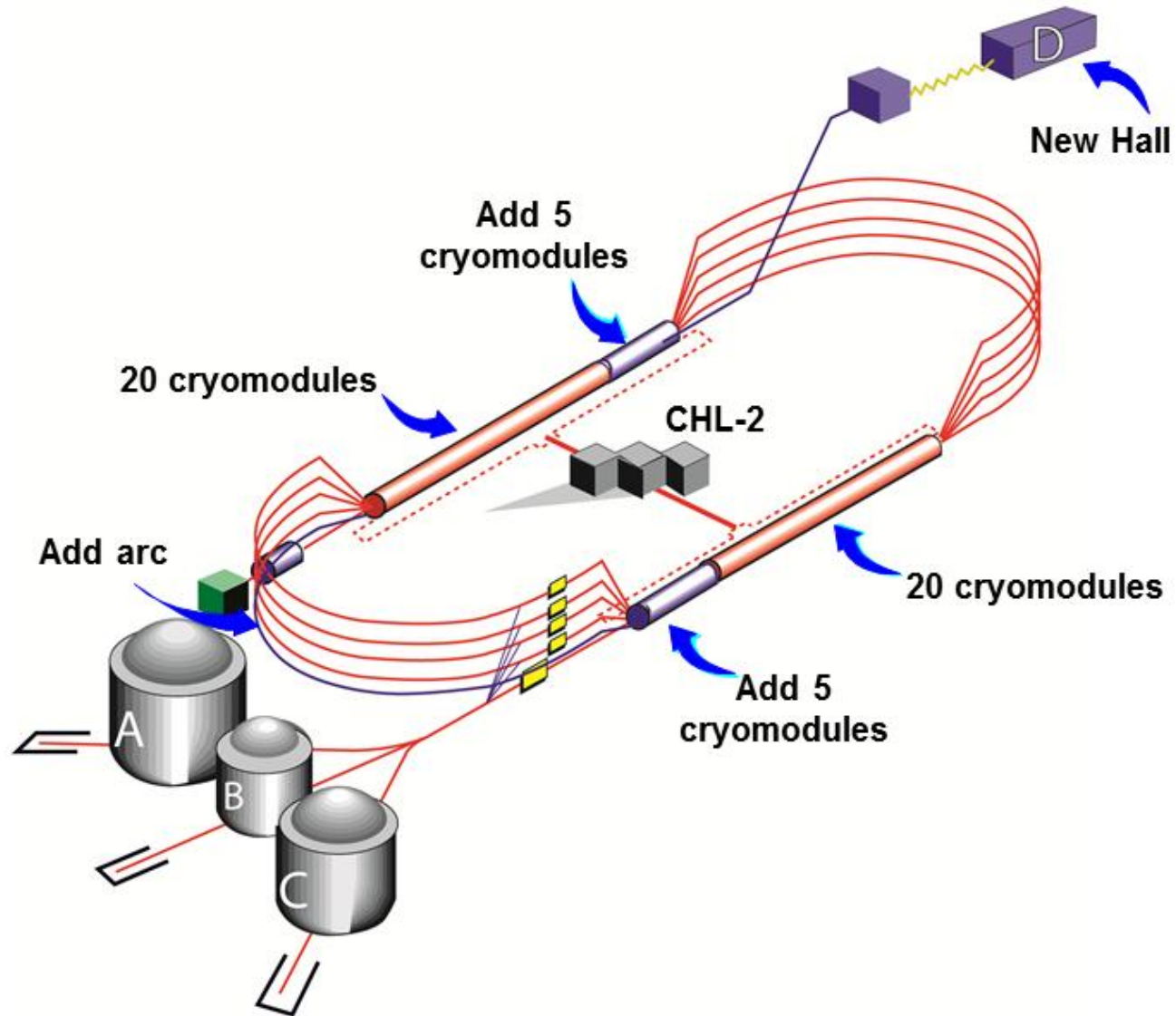
- Welcome! We're very pleased to host this meeting!
- Understanding QCD and hadron structure is one of the key missions of the Jefferson Lab scientific program, carried out by our User Community
- It is very important that we provide the tools needed to enable the scientific community to be successful: accelerator complex, experimental capabilities, vibrant theory and computational sciences
- A vibrant LQCD community and capabilities are critical for maximizing science output of Jefferson lab:
 - Shaping scientific discussions
 - Informing current and future hardware acquisitions to facilities science
 - Software discussions for science productivity and capability
- Lattice QCD and USQCD have had, and will continue to have a strong influence on the Physics program at Jefferson Lab and are a central to maximizing the productivity and impact

Jefferson Lab @ 12 GeV Science Questions

- What is the role of gluonic excitations in the spectroscopy of light mesons?
- Where is the missing spin in the nucleon? Role of orbital angular momentum?
- Can we reveal a novel landscape of nucleon substructure through 3D imaging at the femtometer scale?
- Can we discover evidence for physics beyond the standard model of particle physics?



CEBAF Upgrade

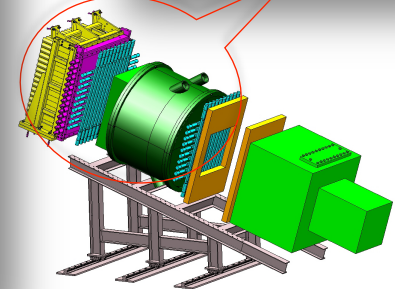
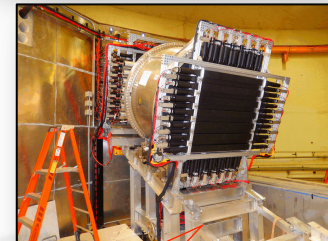
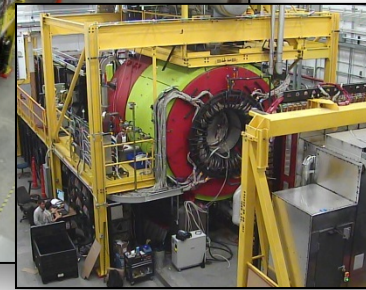
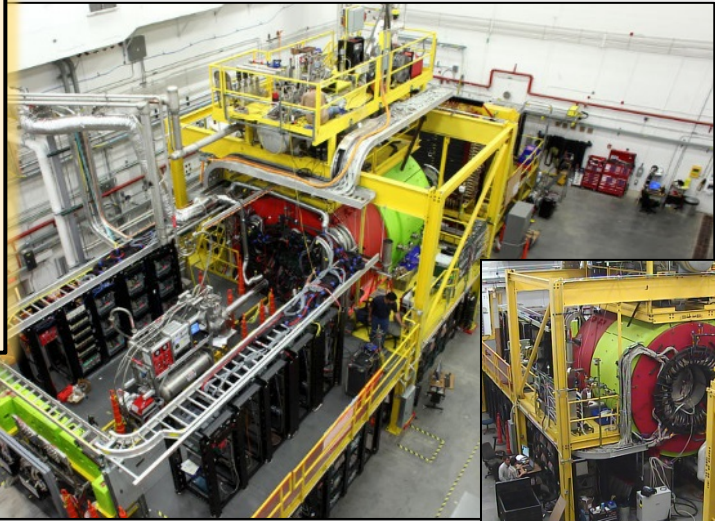


12 GeV Upgrade Project

TPC = \$338M
ETC < \$2M

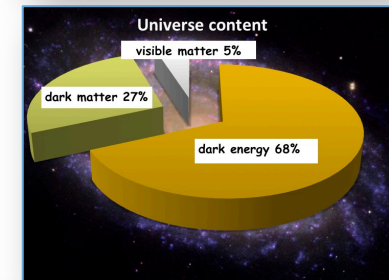
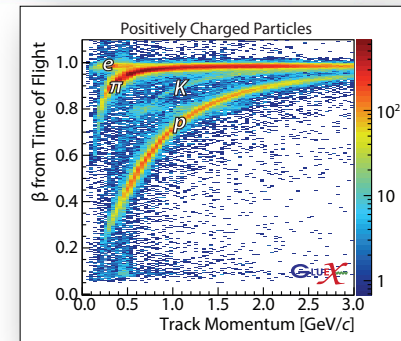
Project Scope (~99.7% complete):

- Doubling the accelerator beam energy – **DONE**
- New experimental Hall D and beam line – **DONE**
- Civil construction including utilities – **DONE**
- Upgrade to Experimental Hall C – **DONE**
- Upgrade to Experimental Hall B – **99%**
 - **Solenoid only scope remaining**



Physics Operation with 12 GeV Facility

- **Quark confinement:** Hall D (GlueX) engineering and 1st physics run completed
 - Basis for more than a dozen papers at APS DNP (Oct 2016)
 - 50 Billion events in Spring 2017
- **Nucleon structure:** Hall A started physics operations
 - Two experiments: G_M^p and DVCS in Fall 2016
 - One Experiment, Argon Spectral Function complete, Spring 2017
- **Dark matter:** Hall B Heavy Photon Search engineering run
 - Results of 2015 data-taking expected soon
- **Proton Radius:** Hall B PRad experiment physics run
 - Experiment run and completed Summer 2016



Starting to exploit the Upgrade for Physics

Welcome!