Jefferson Lab Weekly Briefs

July 11, 2007

12 GeV Upgrade

With the DOE Office of Science Office of Project Assessment Independent Project Review completed, the team is focused on the engineering and design effort. A note of good news is that the first cavity in the Renascence cryomodule operated at 21 MV/m. This cavity will be used later this month for the 12 GeV Accelerator R&D effort known as the "Vertical Slice Test," which includes a high-gradient cavity, klystron and new digital rf controls.

Physics

On July 3, experiment E03-101, knock-out of a proton pair from helium-3, was successfully completed in Hall A, having accumulated all proposed data at high quality. After a brief change-over, experiment E04-018, elastic scattering off helium-3 and helium-4 up to large values of momentum transfer, continued taking data.

Hall B has successfully completed the g13 run group, a search for nucleon resonances predicted in the constituent quark model. Hall B also completed two test runs, one on the feasibility of the measurement of pion polarizability with CLAS, the second on the operational feasibility of a fission detector in Hall B. The test data are being analyzed.

E05-107 has almost completed production data taking in Hall C. The remaining time this week will include verification, background and normalization data for both E05-107 and E04-001/E06-009. An impressive collection of data has been accumulated in Hall C during this two-month run. E05-107 measured elastic electron-proton scattering at over 100 kinematic settings, comprising the most comprehensive study of the linearity of proton form factors as a function of virtual photon polarization. E04-001/E06-009 has taken over 100 inclusive electron scattering scans. As each scan involves several High Momentum Spectrometer momenta, this required over 500 separate combinations of beam energy, target, spectrometer angle and momentum.

Environment, Safety, Health & Quality

Summer has arrived, and hot weather is here. This is a good time to emphasize some basic information about "beating the heat" both at JLab and at home. Remember that heat sensitivity is affected by age, weight, fitness condition and other medical conditions. Follow these tips to stay cool:

- Drink plenty of fluid, about one cup every 15 minutes, even if you do not feel thirsty
- Take rest breaks as needed
- Schedule heaviest work for the coolest part of the day
- Wear lightweight, loose-fitting light-colored clothing plus a hat if in the sun (don't forget the sunscreen)

For additional information, see JLab ES&H Manual Chapter 6670, Thermal Stress, at: http://www.jlab.org/ehs/manual/PDF/6670ThermalStress.pdf

• **JLab Electrical Safety Tip** - In late June, Free-Electron Laser (FEL) staff noted that a piece of recently received commercial equipment used MHV (Miniature High Voltage) connectors. SHV (Safe High Voltage) connectors are an improvement over MHV connectors and are replacing them in many applications. MHV connectors are considered a safety hazard at the Lab, and SHV connectors are the acceptable replacement. SHV connectors are safer because 1) the center pin is well recessed and therefore the touch potential possibility to the exposed high-voltage pin is prevented, 2) the center pin makes contact after the outer grounded pin, and therefore, the connector is grounded throughout the mating process, and 3) the connector is constructed so that it cannot inadvertently be mated to a BNC connector, which otherwise can accidentally mate a low-voltage cable to a high-voltage jack. For additional information, contact Todd Kujawa, the JLab Electrical Safety Engineer, at x7006 or kujawa@jlab.org.

Accelerator
This time period started with an energy change on June 28. The next two weeks were very busy, as many pass and energy changes were successfully performed for all three halls by Operations staff. Multiple energy measurements and a current calibration procedure were done for Hall C. In addition, a cathode spot move was made to ensure continued high-current delivery to Halls A & C. Operational parameters in the injector were restored when some input/output controllers crashed. Finally, a viewer at 0R04 was replaced as well as a control board for septum magnet MYAAT01.

FEL
FEL staff completed the baking of the gun chamber to drive out hydrogen. The chamber is now cooling down. The gun high-voltage power supply was also run in open air, achieving greater than 100 kilovolts (kV). It is now ready for assembly with the rest of the system. Work continues on the Laser Personnel Safety System, and a status review of the Advanced Energy Systems (AES) cryomodule assembly was held.

Theory Center
A collaboration between the University of Bonn, Forschungzentrum Juelich and the JLab EBAC group recently completed a global analysis of charged pion photoproduction data above 2 GeV within the framework of Regge theory (arXiv:0706.0183v1 [nucl-th]). This will provide an important complement to the coupled channel analysis at lower energies that is expected to become impractical as the energy increases. The analysis revealed some interesting behavior in the 2 GeV region that may be associated with new resonances.

Announcements
• **The Department of Energy's Office of Science** seeks highly qualified candidates to fill its deputy for programs position. The job announcement is posted at: http://jobsearch.usajobs.opm.gov/getjob.asp?JobID=58131316&AVSDM=2007%2D06%2D01+09%3A32%3A05&Logo=0&q=deputy+for+programs&sort=rv&FedEmp=N&vw=d&brd=3876&ss=0&FedPub=Y

• **The Department of Energy's Office of Science** seeks highly qualified candidates to fill its Office of Science for Biological and Environmental Research associate director position. The job announcement is posted at: http://jobsearch.usajobs.opm.gov/getjob.asp?JobID=58520806&AVSDM=2007%2D06%2D06+13%3A44%3A02&Logo=0&q=SES-SC-HQ-014+(kd)&FedEmp=N&sort=rv&vw=d&brd=3876&ss=0&FedPub=Y&SUBMIT1.x=47&SUBMIT1.y=18.

• **Bottled drinks on sale.** The Quark Cafe is selling cases of Coca-Cola Company beverages. A case includes 24, 20-ounce bottles for the sale price of $15. To place your order, notify the Quark Cafe staff member at the register or call Chris Thornhill, x7370.

• **SNS calls for proposals**. The Neutron Scattering Science Division at the Department of Energy's Oak Ridge National Lab has announced a call for proposals for experiments at both the High Flux Isotope Reactor (HFIR) and the Spallation Neutron Source (SNS). For more information, visit the ORNL Neutron Sciences website at: http://neutrons.ornl.gov/

• **Safety Shoe Truck at JLab on Thursday**. The Safety Shoe Truck will be adjacent to the ARC loading dock on July 12 from 2-4 p.m. to fill approved purchase requisitions. If you have questions, contact Jill Starling, x7211.

• **JLab's Safety Numbers** (July 11, 2007)
249 Days since Last Recordable Accident (JLab Record: 251)
249 Days since Last Lost Workday Accident (JLab record: 455)

JLab Calendar of Events
July 23-25: DOE S&T Review
Aug. 3: Summer Poster Session
Aug. 6-10: PAC 32
Sept. 3: Labor Day holiday
Sept. 7: United Way Day of Caring