

JLab Weekly Briefs

June 6, 2007

Physics

In Hall B, the g13b run group continues to take production data and, with a planned two-week extension, is expected to complete data taking in the full energy range covered by the proposal by the end of June. The installation of the Frozen Spin Target (FROST) in Hall B has been somewhat delayed and will likely proceed during the summer shutdown.

The target gas in the Hall C cryotarget was replaced with deuterium for the start of the measurements of F2 and R in inclusive electron scattering on deuterium and solid nuclear targets in experiments E04-001 and E06-009.

Accelerator

The past week has been very busy for the accelerator, with quality beam delivery to all three experimental halls the highest priority. The capture section in the injector tripped off several times; the causes are being investigated. A test plan was run in the injector to investigate why the bunch length measurement program was giving the wrong capture phase setting when run. A rack communication problem in the injector was encountered and fixed by Electronics Engineering Support staff. Magnet Shunt MYR9R03 and other east arc shunts faulted due to a communication problem which was difficult to diagnose at first. It was finally successfully troubleshot and fixed by EES staff. Radiofrequency equipment experts worked all week on recovering and optimizing cavities in order to decrease the trip rate as much as possible due to beam loading at higher energies and current.

• JLab's Safety Numbers (June 6, 2007)

214 Days since Last Recordable Accident (JLab Record: 251)

214 Days since Last Lost Workday Accident (JLab record: 455)

Environment, Safety, Health & Quality

The U.S. Senate has designated June as National Safety Month. The National Safety Council (NSC) has set "Celebrating Safe Communities" as the 2007 theme, with the focus this week on workplace safety. An important part of workplace safety is preventing falls with proper ladder use. To prevent falls when using all types of ladders, follow these NSC basic rules in placing, ascending and descending ladders:

- Thoroughly review your planned work to determine if a ladder is an appropriate choice.
- Verify that the ladder is the proper length and type for the job.
- Before using a ladder, inspect it for defects.
- Keep both hands free to grip the ladder and always face the ladder when climbing.
- Place the feet of straight or extension ladders at a distance one-fourth of the ladder length away from the object against which it is leaning.
- Never lean to one side of a ladder. Keep your body centerline between the ladder rails.
- For additional ladder or elevated work platform information, see JLab ESH&Q Manual Chapter 6132, Ladders and Scaffolds at: <http://www.jlab.org/ehs/manual/PDF/6132LaddersScaffolds.pdf>

Free-Electron Laser (FEL)

Efforts on the Gun Test Stand continued work focused on preparing the high-voltage power supply for testing. The optical table mounting for the drive laser has been finalized, and the Brewster window system has been designed. Instrumentation is also developing nicely. In addition, the FEL has received a custom meniscus lens for the terahertz system, which will help imaging activities in that wavelength region.

Theory Center

All realistic potential models for the two-nucleon interaction are to some extent based on boson exchange. However, in order to achieve an essentially perfect fit to the scattering data,

previous potentials have abandoned a pure one boson-exchange mechanism (OBE), giving up the simplicity and easy extension to electromagnetic processes that this simple description provides. Using the covariant spectator theory, a OBE potential has been found (arXiv:0704.1229 [nucl-th]) that fits the 2006 world neutron-proton data below 350 MeV (with a chi-squared per data point of about 1 for each of the 3612 data). This potential has fewer adjustable parameters than previous high-precision potentials and also reproduces the experimental triton binding energy without additional irreducible three-nucleon forces. It can be used to provide covariant predictions for few-body measurements done at JLab and elsewhere.

Announcements

- **The semi-annual TLD changeout will take place over the weekend of June 29.** If you have a JLab radiation badge, be sure to place your badge in its designated badge rack slot before you leave the Lab that week. This will ensure that your badge isn't missing when the changeout takes place.

- **symmetry magazine seeks physics "life list" submissions.** Bird watchers have life lists of sightings. Now fans of particle physics can have a checklist of their own, full of not-to-be missed places, experiences, and artifacts such as Galileo's middle finger; Fermilab's newborn baby buffalo; and a hand-held prototype of the first cyclotron built by E.O. Lawrence. The particle physics life list is scheduled to appear in an upcoming issue of symmetry magazine. Send symmetry editors your suggestions at letters@symmetrymagazine.org with subject line "Life List"; contributors will be acknowledged in the magazine.

- **Two public, evening talks to be given at Users Group Workshop and Annual Meeting.** Benjamin Franklin and the Future will be the topic of Fred Dylla's public lecture on Monday, June 18. On the following day, Tuesday, June 19, Bryon Anderson will give a public lecture on the Physics of Sailing. Both

presentations are free, open to the general public, and will take place in the CEBAF Center auditorium at 8 p.m.; seating starts at 7:30 p.m.

JLab Calendar of Events

June 18-20: Annual Users Workshop

June 26-28: 12 GeV Upgrade Independent Project Review

July 4: Independence Day holiday

July 23-25: DOE Science and Technology Review