

## Jefferson Lab Weekly Briefs October 24, 2007

### Oktoberfest is Today!

Oktoberfest will take place 3-6 p.m. in the Residence Facility field, rain or shine. *Please bring a non-perishable food item for donation to our local food bank.*

### 12 GeV Upgrade

12 GeV detector R&D: Prototyping of the Hall B Region I drift chamber is proceeding well. A full-scale prototype of one sector is under construction in a collaboration between JLab and Old Dominion University. Mechanical parts have been purchased, assembled and surveyed, and mechanical assembly procedure testing has been finished. The completed detector frame has been transported to ODU, where a clean room will be used for the stringing process. Fabrication and testing of custom circuit boards by the JLab Fast Electronics Group is complete; these boards will allow full instrumentation of hundreds of channels of the prototype. Detailed tests with cosmic ray tracks will begin following the chamber stringing, gas system fabrication, and completion of the data acquisition system.

### Physics

Hall A is finalizing the installation for experiment E05-110, a precision measurement of longitudinal and transverse response functions for a variety of nuclei in order to test the Coulomb Sum Rule. The experiment is expected to start commissioning on Oct. 24.

After the installation and cooldown of the Frozen Spin Target (FROST) in CLAS, a leak in the He-3 cryogenics loop was discovered. As this prevents full cooldown to the required temperature, the cryostat had to be disassembled from the insertion cart and transported back to the EEL for repair. The repair is expected to take about a week, delaying the startup of the g9 run by about the same amount. Before the warmup of the cryostat over the weekend, the current in the holding coil was ramped up to full field, showing that the new superconducting joint that connects the coil to the current leads works as expected.

### Environment, Safety, Health & Quality

These timely safety tips from Virginia Natural Gas will help gas heat users stay safe as the weather turns cooler:

- Look: Blowing outdoor dirt or continued bubbling of standing water could indicate a leak.
- Smell: Stay alert for the distinctive rotten-egg smell of natural gas. You should take action any time you detect even a small amount of this odor in the air.
- Listen: Near a natural gas appliance, there may be a hissing or roaring sound when natural gas is leaking.
- Leave: If you detect a natural gas leak, leave immediately. Don't try to identify the source or stop the leak yourself. As you leave, do not touch anything that may cause a spark, including flashlights, light switches and telephones. You should even wait until you are away from the area to use a cell phone.
- Call: Once you are out of the area of the suspected leak, call VNG (emergency #877-572-3342) or 9-1-1. Stay away from the area until a VNG or emergency services representative indicates that it is safe.

• **Tektronix Oscilloscope Alert** - Tektronix has identified that the TDS3000B oscilloscope may cause the TDS3BATB lithium-ion battery pack to overcharge and ignite, and possibly explode. According to Tektronix, TDS3000 and TDS3000B oscilloscopes are safe when operated without the TDS3BATB battery.

Jefferson Lab users of these oscilloscopes are asked to replace TDS3BATB batteries with an appropriate alternative. If you have one of these specific batteries, notify Todd Kujawa, at x7006 or [kujawa@jlab.org](mailto:kujawa@jlab.org). Tektronix will continue to post updated information on the [website](#).

### Accelerator

Five-pass continuous wave (CW) beam to the Beam Switch Yard dump was continued for several shifts in order to assist in troubleshooting minor problems and to get the

radiofrequency (RF) cavities some operational time under a load. The next task in line was to change the machine energy to 535 MeV per pass (low energy setup), tune the machine to this energy and then do an all save for future running at this energy. During allotted beam studies time, various injector test plans were run, including gun high-voltage calibration, Mott measurements and RF optimization. Other test plans ran included the RF separator calibration and the singlet/triplet beam transport. Beam was established to the Hall C dump, but the experiment was not ready for physics beam yet. Tuning of the Hall C line and other issues are being worked on. A vibratory roller test was conducted in the proximity of the east arc to see the impact of construction vehicle movement on beam stability. Results are being studied.

### **Free-Electron Laser (FEL)**

Adm. Landay signed the memorandum of understanding contract extension that provides FEL base funding. The gun test stand beamline is now complete and awaiting pump-down. The new regenerative amplifier for the GTS drive laser is working in Lab 6 and producing 60 picosecond infrared pulses at 10 Hertz with an energy of 1 milliJoule, surpassing spec. User lab safety system upgrades are complete.

### **Theory Center**

Recently the dependence of the energy levels of a system of N bosons in a periodic box has been calculated as a function of two-body and three-body interaction parameters, [arXiv:0710.1827](https://arxiv.org/abs/0710.1827) [[hep-lat](https://arxiv.org/abs/0710.1827)]. This formalism is applied to systems of up to five pions in a box, extracting the scattering length and the three-body force term. The obtained scattering length is consistent with that using the so-called Luscher formula in the two-body sector, while the three-body force is seen here for the first time in a lattice QCD calculation.

### **Computing and Networking Infrastructure**

As announced earlier this month, JLab is installing and deploying a new voicemail system. The new system will provide expanded services and a variety of new capabilities. The

new system is scheduled for activation at 5 p.m. on Thursday, Oct. 25. The new system will use the existing access number (x7888). The old system will remain available during a 30-day transition period; after Thursday evening, the number to dial for accessing the old system will be x7999. Instructions can be found on the [Computer Center website](#).

### **Announcements**

#### **• Walking Path Closed**

The walking path is still closed from the intersection of Canon and CEBAF boulevards to the Residence Facility for the construction of a storm water retention pond; it will remain closed until construction is complete.

#### **• Women in Science Grants**

The [L'Oréal USA Fellowships For Women](#) application deadline is Oct. 31.

#### **• Flu Shots**

Flu vaccine is available at Occupational Medicine. For an appointment, contact Johnie Banks, x7539 or [jbanks@jlab.org](mailto:jbanks@jlab.org).

#### **• JLab's Safety Numbers (Oct. 24, 2007)**

35 Days since Last Recordable Accident (JLab Record: 319)

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

### **JLab Calendar of Events**

Oct. 24: JAG Fall Event: Oktoberfest

Oct. 26-27: Short-Range Structure of Nuclei at 12 GeV [Workshop](#)

Oct. 30: [Science Series Lecture](#): Forensic Dentistry

Oct. 31: Halloween

Nov. 4: Daylight Saving Time ends

Nov. 12: Veterans Day (Observed)

Nov. 22-23: Thanksgiving holidays

Dec. 4: Science Series Lecture: The Laser at 50

Dec. 24-Jan. 1: Holidays/Shutdown Days