



## DIANA hunts for neutrons

Last week researchers from the DIANA project set up portable Helium 3 counters on the 4100 Level of the Sanford Lab to measure neutron backgrounds.

DIANA—Dual Ion Accelerators for Nuclear Astrophysics—is a collaboration of Notre Dame University, the University of North Carolina, Western Michigan University, Colorado School of Mines, Michigan State University and Lawrence Berkeley National Laboratory.

“Nuclear astrophysics is concerned with the origin of elements in stars and stellar explosions,” Notre Dame physicist Andreas Best told Deep Thoughts. DIANA will use two relatively small particle accelerators to mimic the nuclear reactions

in stars. Those reactions, however, have low energies and low event rates. On the surface of the earth, cosmic-ray muons would drown the signals, which is why DIANA will go underground.

Neutrons from the natural radioactive decays in surrounding rock also could interfere with signals from DIANA. The collaboration already has measured neutron backgrounds at the Soudan Underground Laboratory in Minnesota and at the Kimballton Underground Research Facility near Virginia Tech. Best said the collaboration would use those measurements and data from the Sanford Lab to confirm where best to locate DIANA.



Photo by Jaret Heise

Notre Dame University physicist Andreas Best (kneeling) and graduate student Karl Smith set up a counter to detect neutrons on the 4100 Level.

### Safety

## Lessons learned from last week's drill

An underground evacuation drill on June 13 provided valuable practice for the Emergency Response Team and Sanford Lab management.

Environmental Manager John Scheetz, who is a member of the ERT, initiated the emergency scenario at 9:30 a.m. in the Davis Campus on the 4850 Level. Underground Laboratory Supervisor Tom Trancynger “discovered” a “victim” who had been overcome by hydrogen sulfide gas. Trancynger moved the victim to safety and reported the incident. The underground laboratory was evacuated, and an Emergency Operations Center (EOC) was assembled at the Yates Admin building. Two ERT teams also were assembled and deployed.

The ERT teams were put into real action, and the drill was put on hold, when a contractor underground reported difficulty breathing. He was evacuated and transported to a hospital as a precaution. (He's fine.) The

drill resumed, and it was successfully completed at 1:10 p.m., when crews were released to go back to work.

Lessons learned during this exercise will lead to improved emergency communications, an updated risk-management register for underground hazards and a more efficient EOC. The Sanford Lab regularly tests emergency-response systems. Environment, Health and Safety Director Joe Gantos said drills and exercises “ensure utmost protection of workers and the community.”

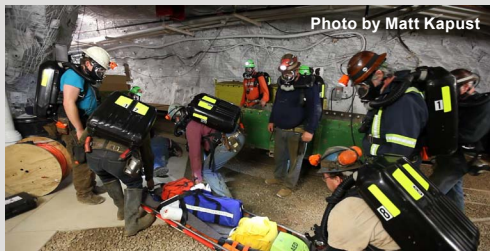


Photo by Matt Kapust

Emergency Response Team members attend to Infrastructure Tech Dan James (on the ground) who played the “victim” in last week's drill.



Photo by Matt Kapust



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**MAJORANA lathe** Top: Machinist Randy Hughes inspects a lathe delivered to the MAJORANA DEMONSTRATOR machine shop in the Davis Campus on the 4850 Level. Bottom: the lathe from the inside.