The third speaker was Ms. Heidi Grant, a fifteen-year-old eighth grade student at Dartmouth Middle School, San Jose, CA. Grant, a B student whose favorite subjects are math and science, and whose goal is to swim in the 1992 Olympics, described how she made superconducting pellets and gave a demonstration of magnetic levitation. Her work on the superconducting pellets was done in her father's laboratory at night.

Los Alamos Scientists Unlock Fission Mystery

A Los Alamos National Laboratory team has discovered that measuring the number of neutrons given off prior to the splitting process can foretell the duration of a reaction. The team, led by Avigdor Gavron of the laboratory's Medium Energy Physics Group, originally began research using heavy ion beams to study the emission of neutrons. While Gavron's team was experimenting with these ions, it was discovered that an excess of neutrons was being emitted prior to the fission process. "We realized these neutrons can serve as a clock for the fission process, telling us how long it will take," said Gavron.

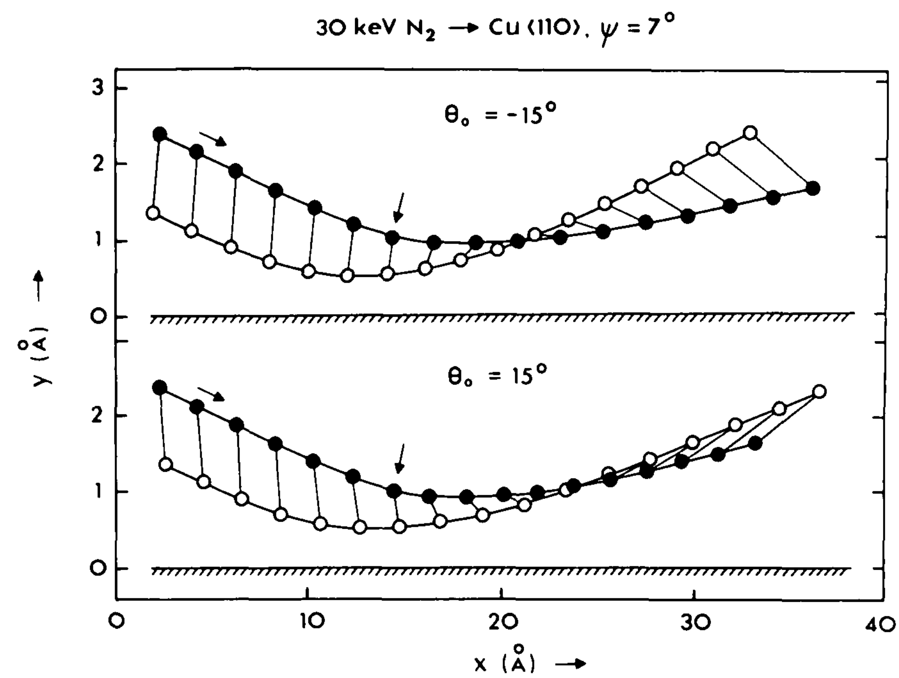
The laboratory experiments included colliding nuclei into each other at more than 100 million eV. "The nuclei come together and boil off some neutrons," said Gavron. "We noticed that the neutrons flew apart in all directions, which implied they were emitted before the fission process was completed." The speeds at which the nuclei were coming apart in the experiments were a phenomenal one-millionth of a millionth of a millionth of a second.

Experiments to verify the theory took place over five years at four national laboratories—Los Alamos, Oak Ridge, Brookhaven, and Lawrence Berkeley Laboratory. Other team members included H.C. Britt and J. Boissevain, J. Wilhelmy, M. Fowler, R. Nix, and A. Sierk. Also participating were A. Gayer, a guest scientist from Israel's Soreq Nuclear Research Center, plus scientists from the Louis Pasteur Institute in France and Max Planck Institut in West Germany. "We also benefited from collaboration with experimentalists at Oak Ridge National Laboratory in Tennessee and Georgia State University," said Gavron.

MRS

Editor's Choice

Figures appearing in the EDITOR'S CHOICE are those arising from materials research which strike the editor's fancy as being aesthetically appealing and eye-catching. No further criteria are applied and none should be assumed. When taken out of context, such figures often evoke images beyond and unrelated to the original meaning. Submissions of candidate figures are welcome and should include a complete source citation, a photocopy of the report in which it appears (or will appear), and a reproduction-quality original drawing or photograph of the figure in question.



V.I. Shulga (*Radiation Effects* **100** (1986) p. 71-84) is the source of the figure in this issue's EDITOR'S CHOICE. In a paper entitled "Surface Semi-channeling of Atomic and Molecular Ions," Shulga derives analytic expressions and performs computer simulations for the low angle scattering of atoms and molecules from the strings of lattice atoms along major crystallographic directions in the surface of a single crystal. This figure traces the trajectory of each atom of a N_2 molecule as it scatters from a <110> Cu atomic string. The N_2 molecular axis is oriented at + or -15° with respect to the string normal as the 30 keV N_2 impinges from the left onto the surface at a glancing angle of 7°. Note that the vertical (distance normal to the surface) and horizontal (distance parallel to the surface) length scales differ considerably. For these parameters the N_2 is dissociated by the collision. The choice of distorted length scales for the sake of clarity, the use of different symbols for each of the two N atoms of the dumbbell molecules, and the apparent crossing of the trajectories all serve to give the impression of a swinging rope ladder.