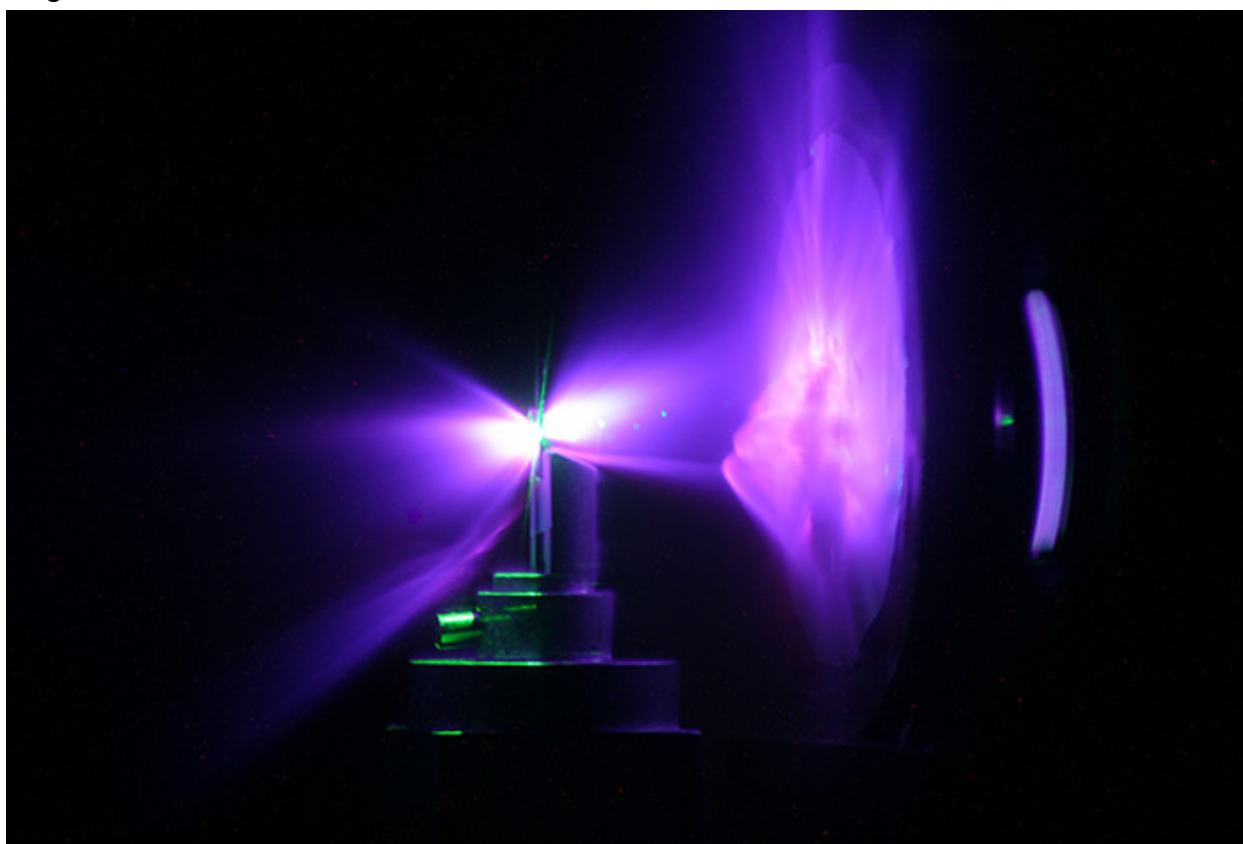


Picture of the Week: Laser-driven neutron source for research and global security

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Laser-driven neutron source for research and global security

At Los Alamos's Trident facility, scientists are using an ultra-high intensity laser beam to produce high intensity short duration neutron bursts. Applications of this novel neutron source include improving upon current technologies for the detection of clandestine nuclear materials and treaty verification, as well as enabling a new generation of nuclear physics experiments and neutron therapy. This photograph is a time-integrated magnified image of one of the Trident shots during a recent experimental campaign.

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To create the image, a thin deuterated-plastic foil target, held near the center of the photo, is hit by the laser, incident from the left. The laser is infrared (and therefore invisible), but the resulting plasma makes plenty of light, some of it as it interacts with the surface of the neutron converter on the right. The converter turns the strong deuterium beam traveling from the laser target towards the right into the neutron beam, also propagating towards the right. The green glow is laser light that is frequency-doubled by non-linear processes.

[Watch a video](#) about how Los Alamos is using neutrons to stop nuclear smugglers.

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