

The power of the Sun... in a neutron generator?

The Sun is hot, very hot even, with a core temperature of 1.57×10^7 °C. Suppose there was a device that emits temperatures five orders of magnitude hotter than the Sun, *now that's hot*. But that's exactly what the Sodern Genie-16 Neutron Generator does! It produces neutrons, a particle part of the atom (which is the building block of the universe), that has kinetic energies equivalent to that temperature. Although, one might ask, how? Much like how the Sun generates energy by smashing particles against each other, so called *fusion reactions*, the neutron generator smashes deuterium and tritium, both heavier cousins of the hydrogen atom, to produce these highly-energetic neutrons.

Here at the Nuclear Applications Laboratory in Lund University, we use these neutrons for both research and educational purposes. The neutron cave, where the neutron generator is housed in, was originally used for a single application within the cave. This project, however, aims to re-develop the neutron cave such that the neutrons are extracted *outside* the cave. Why would we want to do that, you may ask? That's because we want to extend the use of a pre-existing infrastructure, so that a larger variety of research can be done. Before such research can begin, it is important to know how the new configuration affects the laboratory space.

This goal of this work is then to take measurements of effects that neutrons have on the laboratory space, analysing and drawing conclusions from the measurements, thereby laying the foundations for future research work.