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The VENOM Project

The VENOM (Variable Energy Neutron Output Machine) project is a proposed new neutron facility for AWE Nuclear Security Technology (United Kingdom), as a successor to the AWE's current historic ASP neutron source.

The status and plans for this proposed facility will be presented.

The VENOM project aims to deliver a future experimental data factory designed to produce high quality nuclear data and an upgraded neutron irradiation capability for the United Kingdom's AWE Nuclear Security Technology. The current concept consists of three accelerator systems to cover a range of requirements.

The first system is a higher energy and tuneable neutron source to produce a variable quasi-monoenergetic peak neutron energy in the range of 0.5 to ˜25 MeV using the p(Li, d(d, d(Li reactions. The current concept for this system is pushing for a brightness of ˜$1x10^{9}$ to ˜$1x10^{11}$ neutrons per second per cm^2 on small samples of interest over the full energy range available.

The second system is a low energy, very bright accelerator driven D-T and D-D (˜14 MeV and ˜3 MeV) neutron source with the aim to be able to produce neutrons of up to $1x10^{13}$ per second per cm^2 on small samples of interest.

The third accelerator system will be for high energy Accelerator mass spectrometry (AMS). Where this system will be tasked with measuring radioactive materials, to enable the measurements of radioactive cross-sections when conventional decay spectroscopy is not feasible. The concept will also include a full suite of field diagnostics to ensure measurements obtained will provide all data required for modern data measurements to a level expected by evaluators.

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