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Neutron metrology at the National Physical Laboratory.

The National Physical Laboratory (NPL) is the UK's national standards laboratory. The Nuclear Metrology Group (NMG) operates world-leading facilities for measuring neutron source emission rates and providing extensive accelerator and source based calibration fields. Monoenergetic neutrons are produced via the interaction of ion beams from a 3.5 MV Van de Graaff accelerator with different neutron producing targets. Well characterised broad-spectrum fields are available from different radionuclide sources. Thermal fields are produced from a large graphite moderator containing two beryllium targets that produce neutrons copiously when irradiated with deuterons from the accelerator. Moreover, NPL has one of only a few facilities in the world capable measuring the neutron output rate from sealed radionuclide sources to high precision, thanks to the activation of a manganese sulphate solution. In addition to that, NPL can undertake on-site spectrometry measurements with a variety of different detectors. The current capabilities of the NPL neutron producing facility will be presented, and the ongoing research activities and future perspectives will be discussed.

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