4GLS: The UK's fourth generation light source project at Daresbury Laboratory

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4GLS is a suite of accelerator-based light sources plannedto provide the UK with state-of-the-art radiation in the low energy photon regime. Superconducting energy recovery linac (ERL) technology will be utilised in combination with a variety of free electron lasers (IR to XUV), undulators and bending magnets. The 4GLS undulators will be optimised to generate spontaneous high flux, high brightness radiation, of variable polarisation, from 3-100 eV. However, they will also generate usable radiation (in the higher harmonics) up to around 500 eV. The ERL technology of 4GLS will allow shorter bunches and higher peak photon fluxes than possible on storage ring sources. It will also give users the added bonuses of pulse structure flexibility and effectively an infinite beam lifetime; benefits unavailable to storage ring users. The UV free electron lasers will be used to generate short pulses (in the fs regime) of extreme ultraviolet light that is broadly tuneable and more than a million times more intense than the equivalent spontaneous undulator radiation. A strong feature of the scientific programme planned for 4GLS is dynamics experiments.