

ACCELERATING INNOVATION ... IN MEDICINE



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Professor of Physics of the University of Liverpool with a track record of developing novel instruments

Cancer research on the Daresbury ALICE accelerator

The ALICE accelerator at Daresbury is a superconducting energy recovery linear accelerator (ERL). It has two characteristics that provide unique capabilities for the study of cancer. Firstly it drives an infrared free electron laser (IR FEL) that is equipped with a scanning near field optical microscope (SNOM) that makes it possible to determine the chemical structure of tissue with a spatial resolution of 0.1 μm . Secondly, unlike on a synchrotron where the electron bunches circulate $\sim 10^{11}$ times, the electron bunches on ALICE circulate only once. This makes it possible to keep the bunch length short and when the bunch length is shorter than the wavelength emitted as the electron pass through a bending magnet this gives rise to coherent emission and a massive increase in intensity. On ALICE this occurs in the terahertz (THz) region of the electromagnetic spectrum providing an intense broad band source up to an energy of ~ 0.6 THz. These capabilities of ALICE are currently being exploited in studies of cervical, esophageal and prostate cancers in a multidisciplinary research programme. This lecture will explain the role of the ALICE accelerator in the SCAnCan research programme.

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Coffee at 16:00, Seminar at 16:30

CERN Main auditorium

Entrance free - Limited number of seats - Please register on <https://indico.cern.ch/event/437526/>

Conférence en anglais – Traduction disponible en français

