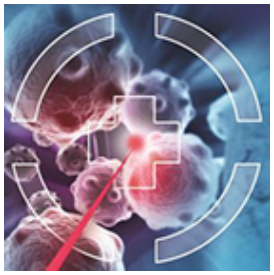

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Non-invasive beam profile monitor for medical accelerators

A beam profile monitor based on a supersonic gas-curtain is currently under development for transverse profile diagnostics of electron and proton beams in the High Luminosity LHC . This monitor uses a thin supersonic gas sheet that crosses the primary beam to be characterised under an angle of 45 degrees. The fluorescence caused by the interaction between the beam and gas-curtain is detected using a specially designed imaging system to determine the 2D transverse profile of the primary beam.

This contribution presents the design features of the monitor, discusses the gas-jet curtain formation and presents various experimental tests, including profile measurements of an electron beam, using nitrogen and neon as gases. Such a non-invasive online beam profile monitor would be highly desirable also for medical linacs and storage rings as it can characterize the beam without stopping machine operation. The presentation discusses opportunities for simplifying the monitor design for integration into a medical accelerator and expected monitor performance.

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