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An overview of proton therapy

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The use of proton beams for radiotherapy has been proposed in the 1940s and patients have been treated with this modality since the 1960s. With the advent of more powerful computers for therapy planning and fast electronics for sophisticated controls in the 1990s it became possible to even better exploit the therapeutic advantage of protons by employing magnetic pencil beam scanning. While pioneering work was carried out in physics research laboratories therapy facilities have now become commercially available by a number of vendors. Technology-driven research is ongoing to further improve the quality of protontherapy and make it available to a larger number of patients.

The talk will give an overview of the development of protontherapy and illustrate how therapeutic innovations have been driven by technological progress. Current research topics like ultra-high dose rate beam delivery ("FLASH") and approaches to compensate the effect of organ motion will be presented.

Author: GROSSMANN, Martin (Paul Scherrer Institut)

Presenter: GROSSMANN, Martin (Paul Scherrer Institut)