

Accelerators for Health: From Current to Dream machines

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Accelerators are an indispensable tool in improving human health, they are playing an increasingly important role in identifying and curing affections, such cancer that are otherwise difficult to treat; they also help to understand how major organs such as the brain function, and thus to determine the underlying causes of diseases of growing societal significance such as dementia. One of the most exciting developments in cancer therapy is the use of sculpted particle beams, that can reach deep-seated tumours with less harm to surrounding tissue [<http://apac.ific.uv.es/apac/>], being this last aspect one of the major challenges in this domain. Any kind of energetic particle from high-energy photons (X-rays and gamma rays), electrons, protons, neutrons to various atomic nuclei and more exotic species particle have been used to treat cancer. In the talk I will review the state of the art, challenges and issues of the accelerators used in Particle Therapy as well as the dose delivery techniques and I will describe some of the further developments for the next generation of this type of accelerators.