Radiation Therapy

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***Abstract*— Starting with Gamma sources before moving to X-rays, radiation therapy also proposes protons or heavier ions like carbon to treat cancer tumors with unrivalled accuracy. Today, radiation therapy is a proven cancer treatment modality from which several tens of thousands of patients benefit each year. But being a proven treatment modality does not mean it is not evolving. In this plenary, we will start with an overview of radiation therapy systems using X-rays and heavier particles (protons, carbon ions), with a focus on the latter; we will depict their main characteristics and equipment needs for an efficient treatment. Then, we will describe and discuss a few of the current challenges in the field, with a focus on how various magnets technologies play a key role in addressing these.**

***Keywords (Index Terms)* — Proton Therapy, superconducting magnet, accelerator.**

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