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## **PRIMA+: a proton Computed Tomography apparatus**

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The proton Computed Tomography (pCT) is a medical imaging method, based on the use of proton beams with kinetic energy of the order of 250 MeV, aimed to directly measure the stopping power distribution of tissues (presently calculated from X-rays attenuation coefficients), thus improving the accuracy of treatment planning in hadron therapy. A pCT system should be capable to measure tissue electron density with an accuracy better than 1% and with a spatial resolution better than 1 mm. The blurring effect due to multiple Coulomb scattering can be mitigated by single proton tracking. As a first step towards pCT the Prima+ collaboration built a prototype capable to carry out a single projection: multiple radiographies of a rotating object can be used to reconstruct a tomographic image. This apparatus includes a tracker (based on identical tracker modules, each including a silicon microstrip detector) to measure proton trajectory and a calorimeter (made of four YAG:Ce optically separated crystals) to measure the particle residual energy. The system will be described, radiographies and a first tomographic image will be shown.

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