Monte-Carlo simulations of dose distribution in proton therapy

Related to the increased interest in proton therapy in Norway, we are now starting to build research competence in this field at IFY.

This project will involve the building of a simulation environment for Monte Carlo simulations of dose distribution in proton therapy. We want to build a simulation model which can handle different proton energies, multiple tissue types, different beam profiles in time and space (passive scattered beam, actively scanned beam, continous and pulsed), and patient motion.

The project work will start with assessing different approaches to this simulation problem, decide on an implementation strategy, and start working on the different sub-parts of the model. If successful, the model will then be used to evaluate the effect of pulsed versus continous proton beam in scanning beam applications.

The project will be performed at IFY, but in close collaboration with St.Olavs Hospital and Haukeland Hospital in Bergen, where they already have research experience in proton therapy.

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