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Image reconstruction with proton computed tomography

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One of the most successful treatments in cancer therapy is proton therapy, with radiation planning being a key element. Photon CT is commonly used for this purpose; however, it does not provide sufficiently accurate information about the range of protons. Therefore, proton CT imaging is more favorable for radiation planning. Due to the Coulomb scattering of protons, it is important to calculate the Relative Stopping Power at the voxel level (thus, appropriate handling of trajectories is also required), for which several algorithms have been developed. The aim of my research is to test, further develop, and optimize a software package using the Richardson-Lucy algorithm developed in the Bergen Proton-CT Collaboration.

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