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Wed-Af-Po3.20-05 [58]: Design considerations of an alternating-gradient canted-cosine-theta superconducting magnet applied to proton therapy

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As a novel superconducting magnet scheme, Canted-Cosine-Theta(CCT) magnet has demonstrated advantages of superior field quality and structure compactness. Combining with Alternating-Gradient (AG) field feature, CCT magnets can be applied to proton therapy gantries with the momentum acceptance significantly increased. This paper will introduce design considerations of a 135 degree AG-CCT magnet for proton therapy gantry, including design and optimization of magnetic field with AG combined function. Technical issues covering the choice of superconducting coils, layer scheme and mechanical structure of the CCT magnet will also be discussed.

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