

New quadrupole electromagnets with laminated steel yokes for the HIE-ISOLDE Beam Transfer Lines

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The aim of the HIE-ISOLDE project is to greatly expand the physics program compared to that of REX-ISOLDE, containing three major elements: higher energies, improvements in beam quality and flexibility, and higher beam intensities. In the framework of this project, a new beam focusing quadrupole electromagnet is designed, which shall be followed by its series production in industry. Extensive magnetic simulations have been performed in order to evaluate and optimize the new quadrupole's electromagnetic design and harmonic content. The performance requirements and main parameters of the magnet, along with its basic design methodology and simulation results of the latest quadrupole's electromagnetic configuration are presented.

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