عنوان مقاله:

The Optimal Design Parameters for MRI Main Coil HOLLOW CYLINDRICAL COIL DESIGN

محل انتشار:

کنفرانس بین المللی فناوری و مدیریت انرژی (سال: 1394)

تعداد صفحات اصل مقاله: 7

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خلاصه مقاله:

in this paper, a method is presented for computing the magnetic field produced by a circular coil that contains a large number of turns wound onto asolenoid of rectangular cross section. The coil is thus approximated by a circular ring containing a continuous constant current density, which is very close to the realsituation when wire of rectangular cross section is used. All that is required to evaluate two functions, which are defined as integrals of periodic quantities. An example isgiven, in which this approach is simulated in MATLAB routine to optimize coils for NMR. In this paper, In orderto minimize the volume of MRI magnets and reduce the perpendicular component of magnetic field, three optimal methods-- iterative algorithm, contour method and geneticalgorithm are presented to make optimal design of geometry parameter of magnets. And the comparisonamong methods has been done. The most important feature of these simulations is that we can apply it for similar design such as SMES and accelerator magnets

کلمات کلیدی:

Fast computation, Biot-Savart law, Magnet design, optimal wired volume