

Title (en)

CONTINUOUSLY WOUND SOLENOID COIL WITH FINAL CORRECTION FOR GENERATING A HOMOGENEOUS MAGNETIC FIELD IN THE INTERIOR OF THE COIL AND ASSOCIATED OPTIMIZATION METHOD

Title (de)

KONTINUIERLICH GEWICKELTE SOLENOIDSPULE MIT ENDKORREKTUR ZUR ERZEUGUNG EINES HOMOGENEN MAGNETFELDES IM SPULENINNEREN UND ZUGEHÖRIGES OPTIMIERUNGSVERFAHREN

Title (fr)

BOBINE SOLÉNOÏDALE ENROULÉE EN CONTINU AVEC CORRECTION FINALE POUR CRÉER UN CHAMP MAGNÉTIQUE HOMOGENÈ À L'INTÉRIEUR DE LA BOBINE ET PROCÉDÉ D'OPTIMISATION ASSOCIÉ

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Application

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Abstract (en)

[origin: WO2010063260A1] The invention relates to an apparatus for generating a homogeneous magnetic field and to an optimization method for magnetic fields in a sample space, which method provides specifications for producing such an apparatus. The apparatus comprises at least one field coil for generating the magnetic field and is characterized in that the turns of the field coil are continuously wound around the sample space and the turn diameter of the field coil continuously changes at least in a subarea of the field coil along the longitudinal axis of the sample space. In this case, the correction of inhomogeneities in the magnetic field which are caused by the finite length of the field coil is distributed over the entire field coil. The apparatus can thus be implemented in a simpler and more precise manner than with the correction coils used to correct inhomogeneities according to the prior art. Instead of the previous series expansion of the magnetic field, the method for optimizing the magnetic field uses a quality function in conjunction with a simulation of the magnetic field on the basis of the optimization parameters. This can be used in a larger volume than the series expansion.

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