

A Numerical Computational Method of MRI Static Magnetic Field for an Ergonomic Facility Design Guidelines

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Abstract : Magnetic resonance imaging (MRI) presents safety hazards, with the general physical environment. The principal hazard of the MRI is the presence of static magnetic fields. Proper architectural design of MRI's room ensure environment and health care staff safety. This research paper presents an easy approach for numerical computation of fringe static magnetic fields. Iso-gauss line of different MR intensities (0.3, 0.5, 1, 1.5 Tesla) was mapped and a polynomial function of the 7th degree was generated and tested. Matlab script was successfully applied for MRI SMF mapping. This method can be valid for any kind of commercial scanner because it requires only the knowledge of the MR scanner room map with iso-gauss lines. Results help to develop guidelines to guide healthcare architects to design of a safer Magnetic resonance imaging suite.

Keywords : designing MRI suite, MRI safety, radiology occupational exposure, static magnetic fields

Conference Title : ICBEST 2014 : International Conference on Biomedical Engineering Systems and Technologies

Conference Location : Rome, Italy

Conference Dates : September 18-19, 2014