
Laplacian distribution of magnetization

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Abstract: It is shown in a brief way how to develop the general solution of the direct problem of magnetometry. Special attention is paid to an important case of fields with Laplacian distribution of magnetization. The solutions are presented by the help of the quaternion apparatus, which renders compact and easy handling of the solutions. The solution of the direct magnetization problem in the case of a generalized analytical magnetization is especially worth mentioning. It was shown that in the case of Laplacian magnetization, vector \mathbf{M} satisfying conditions $\operatorname{div} \mathbf{M} = 0$, $\operatorname{rot} \mathbf{M} = 0$ in inner region V_i , it could be derived on the base of function f being the solution of the Laplace equation.

Key words: Direct problem of magnetometry, quaternions, analytical magnetization

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