

二次电流场多次叠加概率成像

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摘要 基于地下电流场的积分公式, 离散化的二次电流场被分解为电性不连续界面上的一系列点电荷电场的代数和. 单位正点电荷电场被引入作为空间扫描函数 (SDS), 积累电荷出现的概率 (COP) 函数定义为二次电流场与 SDS 的互相关. 为对概率成像结果进行定量分析解释, 提出了规范的积累电荷出现的概率 (NCOP) 函数. 通过应用有限元算法对 2D 地电模型进行二次电流场合成, 实现了二次电流场的多次叠加概率成像. 结果表明对均匀空间中赋存地质异常体的电性结构, 概率成像方法对地下异常体的空间位置有较好的指示作用.

关键词 [电阻率层析成像](#) [二次电流场](#) [概率成像](#) [空间扫描函数](#) [规范的积累电荷出现的概率函数](#)

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Multiple superimposed tomography of probability on second electrical field

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Abstract Based on integral formula, discrete second electrical field is expressed as a sum of elementary contributions coming from charges accumulated on the surfaces of resistivity discontinuity. The electrical field of a positive unit point charge is introduced as space domain scanning (SDS) function, and charge occurrence probability (COP) is defined as the cross-correlation of the second electrical field with the SDS function. In order to analyze COP anomalies, COP function is normalized. To test the effectiveness of probability tomography of second electrical field, we use finite element algorithm to synthesize second electrical field for several models, and implement multiple superimposed tomography of probability. The results are quite satisfactory.

Key words [Electrical resistivity tomography](#); [Second electrical field](#); [Probability tomography](#); [Space domain scanning \(SDS\) function](#); [Normalized charge occurrence probability \(NCOP\) function](#)

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