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层状介质高频电磁场计算方法及结果分析

郑圣谈,曾昭发,张代国,王者江,姚健

（吉林大学地球探测科学与技术学院，长春 130026）

摘要　本文在研究了高密度采样线性滤波算法计算层状介质高频电磁场的电磁响应的基础上，系统比较了Anderson等数值计算方法的速度和精度，给出了不同的地电参数和接收距对该计算方法精度的影响.通过比较表明，高密度采样算法不仅速度快，而且精度高.本文还对水平回线源层状介质当发射线圈位于地面时的表达式的第二项积分进行了公式推导，为电磁场的计算提供了清晰的思路.

关键词　高频电磁场,高密度采样,线性滤波,Chave高斯积分

分类号　P318,P319

DOI:

Calculation about high-frequency electromagnetic response and cases analyzing

ZHENG Sheng-tan, ZENG Zhao-fa, ZHANG Dai-guo, WANG Zhe-jiang, YAO Jian

(College of Geoexploration Science and Technology, Jilin University, Changchun 130026, China）

Abstract Linear filtering algorithm with high density sampling is presented according to the low precision or low efficiency of the high-frequency electromagnetic responses of calculation. The algorithm is compared to other algorithms in precision and efficiency with the half-spaced media model, and the results shows that the algorithm presented here is more accurate and efficiency. The numerical precision of this algorithm in different parameters and transmitter-receiver offsets are also calculated and compared which will be very important in application. In additional, the second integral expressions of electromagnetic responses of layer model with horizontal loop source are deduced while the transmitter is set on the earth surface, so the divergence of numerical calculation is improved.

Key words high frequency electromagnetic fields　high density sampling　linear filtering algorithm　Chave Gaussian Integral

通讯作者:
 zhshengtan11@163.com
作者个人主页: 郑圣谈;曾昭发;张代国;王者江;姚健