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九江—瑞昌矿集区的3D结构及对区域找矿的启示

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The three-dimension structure and the enlightenment to the regional prospecting of the Jiujiang-Ruichang district

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摘要

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摘要

本文分析了九瑞地区重、磁场的分布特征. 运用最新的方法技术对已有的重磁资料重新进行处理: 采用重磁多尺度边缘检测方法, 对九瑞矿集区区域重力和航磁数据进行了边缘检测, 并根据检测结果重新厘定了断裂系统的展布位置. 在整理、分析九瑞地区地质、地层物性资料的基础上, 对实测的1:5万重磁数据进行较细致的准三维反演. 同时将重磁三维物性反演应用到岩浆岩空间结构研究中, 获得了矿集区地层结构及岩浆岩三维空间形态特征. 根据反演所得磁化率强弱, 分析了岩体的基性程度, 为寻找与火山岩、侵入岩体有关的金属矿产提供了指示信息. 最终建立的模型给出了地下地层的分布特征、控矿构造的展布规律、与成矿相关岩体的三维形态以及已知矿点的空间分布特征, 为在九瑞矿集区的深部寻找隐伏矿体提供了新的信息.

关键词 九瑞矿集区, 重磁多尺度边缘检测, 重磁三维物性反演

Abstract:

The authors analyzed the gravity and magnetic anomalies of the lower and middle reach of the Yangtze River area firstly, then studied the distributing characters of gravity and magnetic fields of Jiujiang-Ruichang district. The existing data of gravity and magnetic anomalies have been processed through the latest methods and techniques. Based on the result of gravity and magnetic multi-scale edge detection of the regional magnetic and gravimetric data of Jiujiang-Ruichang district, the distribution location of the fault system is redefined. On the basis of understanding the geological data and stratum parameter about Jiujiang-Ruichang district, detailed inversion was carried out in the relevant region. Meanwhile, three-dimensional magnetic and gravity properties inversion was used to distinguish and forecast the spatial distribution of stratum structure and igneous rocks in three-dimensional shape. According to the strength of inversed magnetic susceptibility, the basicity of magma rock has been analyzed which provides information for metal mineral exploration related with volcanic and intrusive rocks. The final geological models have been set up which vividly show the distribution characteristics of the formations, the ore-controlling structures and the three-dimensional configuration related with mineralization as well as the distribution characteristics of the body. The results supply abundant information for seeking deep concealed deposits in Jiujiang-Ruichang district.

Keywords Jiujiang-Ruichang district, Gravity and magnetic multi-scale edge detection, Three-dimensional magnetic and gravity properties inversion

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