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利用熵平均法对地面 γ 能谱数据局部干扰消除的应用研究

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Study on the application of entropy average method in ground γ spectrometry for local disturbance elimination

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摘要

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摘要 阐述了熵平均法对地面 γ 能谱测量局部干扰的消除的基本原理和方法,应用此方法对浅覆盖区地质填图的 γ 能谱测量剖面数据及应用 γ 能谱测量确定古城墙位置的平面测量数据进行了处理,处理结果表明该方法对于消除地表植被及局部土壤元素富集随机干扰、突出弱异常具有明显的效果,使地质填图中进行岩性划分界线明显,考古中古城墙表现的弱异常突出,边界清晰.通过对熵平均法应用的讨论,可以看到5点熵平均对于局部干扰压制较多而对异常削弱较少的特点;与多点平滑相比,熵平均对于突跳点具有更好的压制作用.熵平均法对于地面 γ 能谱测量随机影响的消除起到了较好的效果,使地面 γ 能谱测量得到了较好的应用.

关键词: 熵平均法 地面 γ 能谱测量 局部干扰 随机影响

Abstract: This paper briefly describes the basic principle and the entropy average method for local disturbance elimination in ground γ spectrometry. This method was employed to process the data measured from both the γ spectrometry profile of the shallow burden area geologic mapping and the ancient city wall determination. The results showed that this method has obvious effect for eliminating the random influences caused by surface plants and the local soil elements enrichment, and enhancing the weak abnormality. Furthermore, after data processing, the lithologic boundary line becomes more significant during geology mapping, the weak abnormality possessed by ancient city wall was enhanced with clear boundary in the archaeological γ ray measurements. By means of the discussion of the entropy average method application, it is showed that 5-point entropy average method can suppress more local disturbance and weaken less the abnormality. Compared with multi-point smoothing method, entropy average method has more suppression effect on the sharp point. These results indicate that the entropy average method is effective for random influences elimination of ground γ spectrometry and show more prospects in other application of γ spectrometry.

Keywords: Entropy average Ground γ spectrometry Local disturbance Random effect

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