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迭加法减小 γ 数字辐射成像系统噪声的研究

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摘要 γ 数字辐射成像(γ DR)系统的主要噪声源是由射线与物质相互作用的随机性产生的统计涨落噪声,对采样信号进行多次迭加平均是减小噪声的有效方法。本工作从理论上推导了迭加法降噪效果的影响因素,得到了迭加后噪声强度与迭加次数和采样周期之间的关系,并用实验进行了验证。研究结果应用于钴 60集装箱检测系统的降噪处理,取得了良好的效果。

关键词 [\$\gamma\$ 数字辐射成像系统](#) [噪声](#) [迭加](#)

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Study on Reducing the Noise of γ -digital Radiography System by Add-up Method

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Abstract The main noise of γ digital radiography(γ DR) system is the statistical noise caused by the randomness of interaction between γ ray and matter. It's an efficient method to reduce the noise by using average value of sampling signals. The factors which influence the noise reducing effect of add up method is deduced theoretically, and relationship between noise intensity and add up times and sampling period is acquired, and the result is verified by experiment. The result has been successfully applied in the noise reduction of Co 60 container inspection system.

Key words [\$\gamma\$ -digital radiography system](#) [noise](#) [add-up](#)

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