

反应堆工程

## 基于小波变换的炸药NQR信号处理

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**摘要** 利用核四极共振(NQR)原理探测隐藏炸药具有准确率高、误报率低、无磁污染等优点,但NQR信号十分微弱,湮没在噪声中,不易检测,成为制约NQR技术发展的瓶颈。根据NQR信号的特点,提出并实现了一种基于改进阈值函数小波变换的NQR信号处理方法。经过试验对比,该方法可有效消除外界噪声对信号的干扰,提高系统探测的准确性。

**关键词** [核四极共振](#) [炸药探测](#) [小波变换](#)

分类号

## Processing Method of <sup>14</sup>N Nuclear Quadrupole Resonance Signal in Explosive

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**Abstract** Using nuclear quadrupole resonance (NQR) to detect hidden explosive has many advantages, such as high accuracy, low false alarm rate, non magnetic pollution, and so on. However, NQR signal is very weak, obliterated in the noise, and difficult to recognize, and the practical use of NQR is restricted by this. According to the characteristics of NQR signal, a signal processing method was presented and realized based on wavelet transform. It shows that this method can eliminate the interferences of external noise, and improve the detection accuracy of the system comparing with other methods.

**Key words** [nuclear quadrupole resonance](#) [explosive detection](#) [wavelet transform](#)

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