

## 采用能量检测的UWB应答式定位系统

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**摘要** 提出一种呼叫应答式的传感器定位系统。利用超宽带(UWB)脉冲串来代替单个极窄脉冲,易于通过能量检测方式接收。采用呼叫应答式的定位算法和最小均方误差估计获取波达时间,提高了定位精度并且对多径干扰和非视距传播具有鲁棒性。同时利用平均时延扩展来修正波达时间,进一步提高系统定位精度。仿真结果表明,在IEEE802.15.4a给出的室内多径信道中,系统信噪比为-20dB~30dB时,定位误差小于60cm。

**关键词** [超宽带重复脉冲](#) [能量检测接收](#) [传感器网络定位](#) [平均扩展时延](#)

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## UWB call-response location system employing energy detection

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### Abstract

This paper proposes a Call-Response Location System, where the UWB pulse train is utilized as the substitute for a single impulse. The energy detection can be exploited to reduce the complexity of the system. The call-response location algorithm and minimum mean-square error estimation are applied in the calculation of the time of arrival (TOA). And the mean delay spread is introduced to correct TOA for improved location accuracy in the multi-path and non-line-of-sight (NLOS) propagation environment. Results from the simulations conducted shows that in UWB channel proposed IEEE 802.15.4a the system succeeds in achieving a position location accuracy of <60cm when the SNR is set at the range of -20dB to 30dB. <BR>

**Key words** [UWB pulse train](#) [energy detection](#) [location in sensors network](#) [mean delay spread](#)

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