基于AOA降维和同心圆定位的三维传感器网络节点自定位方法

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摘　要：

本文在三维同心圆定位方法的基础上引入AOA测距技术，提出了一种基于AOA降维的同心圆定位方法(AC-RL)。该方法中，未知节点通过锚节点发射的测距信息测出未知节点与锚节点之间的AOA信息，再利用AOA信息将对应锚节点发射的分级广播信息进行降维处理，最后按同心圆定位算法，将未知节点在锚节点所处水平面上的投影点位置求出，最后得出未知节点位置信息。仿真结果表明了AC-RL算法与同心圆算法相比提高了定位精度，提高了整个无线网络的适应性，但在低能耗方面不够理想。

关键词：无线传感器网络，三维定位，AOA，同心圆

AOA and Concentric Algorithm based three dimensional reduction node self-localization scheme

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Abstract:

Many sensor networks application require location awareness, particularly in the application of three-dimensional scenes. This paper discusses about AOA and Concentric Algorithm based three dimensional reduction node self-localization mechanism(AC-RL) for WSN. This mechanism operates in a three dimensional space. In this scheme, unknown node measures the AOA information between anchor nodes and itself by anchor nodes broadcast their location information. AOA information is utilized to calculate the unknown nodes in the horizontal plane of the projection area. Hence, the 3D positioning is simplified to 2D circles concentric positioning. On receiving such messages the static nodes calculate their individual position. The simulation results demonstrate that the AC-RL algorithm has some advantages in positioning accuracy and node density.

Keywords: WSNs, three-dimensional positioning, AOA, concentric

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