

## **Estimates for the spatial locations of the indoor objects by radial distributions**

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Recently we daily use the global positioning systems for obtaining the location for car navigation. These systems are very convenient for driving, but we sometimes need more accurate system for obtaining the locations of the specified objects like sports athletes, and also may demand for the location estimation in the indoor environments for obtaining the nursing care information in hospitals. We propose the statistical method for estimating the location in the room where we cannot receive the satellite information on the location. We use the time of arrival (TOA) data based on the ultra-wideband (UWB) tag system. The proposed method is based on the marginal likelihoods of radial distribution generated by positive survival distribution among the several anchor radio sites placed in the room. We shall compare the proposed statistical method and other previous methods and conclude that our iterative method is promising for practical use.

**Key Words:** Radial distribution, spatial location estimates, global positioning system, marginal distribution