Received Signal Strength Based Localization in Inhomogeneous Underwater Medium

Saleheh Poursheikhali , Hossein Zamiri-Jafarian

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Highlights

- The relation of transmission loss for acoustic wave propagation in inhomogeneous medium with an isogradient sound speed profile is presented.
- An oversampled matched filter based method for RSS measurement (OSMF-RSS) is proposed in asynchronous transmitter-receiver scenario which, unlike DS-RSS, works on the basis of oversampling idea and does not have the drawbacks of DS-RSS.
- By use of the obtained transmission loss model and OSMF-RSS, an iterative RSS based localization algorithm is derived. This algorithm, contrary to TOF method, is robust against sensor asynchrony and outperforms TOF when signal bandwidth is lower than a specific level.
- The performance of the proposed RSS based algorithm is examined in fading condition. In weak flat fading, unlike sever one, OSMF-RSS performs accurate. Thus, Improved OSMF-RS for measuring RSS in presence of fading is proposed and simulation results show that in sever flat fading Improved OSMF-RSS performs more accurate.