

Abstract

The present disclosure proposes a method for joint estimation of target localization and environmental spread parameter of underwater wireless sensor network, including: S1, according to a layered spread effect of an acoustic signal underwater, constructing a ranging model of received signal strength based on Snell's law and ray tracing theorem; S2, constructing an objective function using an environmental spread parameter and a target position as variables through multiple first-order Taylor series expansions; S3, performing coarse-grained estimation on the variables using a dichotomy method; and S4, performing linear expansion according to values of the coarse-grained estimation and re-optimizing iteratively to further improve the accuracy of a solution. The present disclosure has the advantage that the problem of increased localization errors caused by unknown environmental spread parameters and layered effects during underwater signal spread is solved.

[Fig.1]