Waves in Random and Complex Media ›
Volume 24, 2014 - Issue 2

Articles

Structure functions for optical wave propagation in underwater medium

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Pages 164-173 | Received 06 Nov 2013, Accepted 15 Jan 2014, Published online: 11 Feb 2014

Cite this article https://doi.org/10.1080/17455030.2014.884735

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Abstract

The features of the wave structure function (WSF) derived for spherical excitation in turbulent water are investigated. It is found that as the rate of the dissipation of turbulent kinetic energy ε decreases, WSF increases. The rate of dissipation of the mean-squared temperature X_T is observed to be proportional to the WSF value. Deviation from the source and the receiver axis reveals greater turbulence effect. Salinity driven turbulence gives greater WSF values compared to the temperature driven turbulence. As expected, WSF is found to increase as the propagation distance increases.

Acknowledgments

The authors gratefully acknowledge the support provided by Çankaya University and the ICT COST Action IC1101 entitled “Optical Wireless Communications – An Emerging Technology”.