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Structure functions for optical wave propagation in underwater medium

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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.

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