



Spectrum changes of pulsed chirped Generalized Hermite cosh-Gaussian beam through turbulent biological tissues

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Abstract

The main objective of this study is to investigate the development of the spectral intensity profile of a pulsed chirped Generalized Hermite cosh Gaussian (GHCG) beam through turbulent biological tissues. This is achieved using Schmitt's model for the power spectrum refractive index, the extended Huygens-Fresnel integral, and the Fourier Transform method. Graphical representations need to be generated to explore the effects of beam parameters and biological turbulence parameters on the considered beam. Furthermore, a thorough discussion is conducted to examine the influence of both optical parameters and biological tissue characteristics on spectral shifts at various observation positions. The findings hold potential applications in image recognition, medical devices, and the noninvasive optical diagnosis of biological tissue.
