

The characteristics of Laguerre higher-order cosh-Gaussian beam propagating in uniaxial crystal orthogonal to the optical axis

Published: 18 July 2024

Volume 56, article number 1325, (2024) [Cite this article](#)

[Halima Benzehoua](#), [Farooq Saad](#) & [Abdelmajid Belafhal](#) 

Abstract

In this study, we examine the propagation characteristics of Laguerre Higher Order Cosh-Gaussian beam (LHOchGB) in uniaxial crystals. Analytical expression of the LHOchGB propagating in the considered crystal is derived. During beam propagation, our analyses are performed using numerical simulations under different parameters to investigate the impact of beam parameters and crystal refractive indices on the received beam. The obtained results demonstrate that the features of the incident beam and the crystal's refractive indices can be adjusted to control the intensity and phase distributions of the corresponding beam. We anticipate that the insights gleaned from our research will prove valuable for controlling optical particles.