Quantum Physics

Collins diffraction formula and the Wigner function in entangled state representation

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Based on the correspondence between Collins diffraction formula (optical Fresnel transform) and the transformation matrix element of a three-parameters two-mode squeezing operator in the entangled state representation (Opt. Lett. 31 (2006) 2622) we further explore the relationship between output field intensity determined by the Collins formula and the input field's probability distribution along an infinitely thin phase space strip both in spacial domain and frequency domain. The entangled Wigner function is introduced for recapitulating the result.

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