

SPATIAL DYNAMICS OF OPTICAL VORTICES
WHEN GAUSS—LAGUERRE BEAM PROPAGATES
IN THE KERR NONLINEAR MEDIUM

*V.P. Aksenov, I.V. Izmailov¹, B.N. Poizner¹,
O.V. Tikhomirova*

Institute of Atmospheric Optics,
Siberian Branch of the Russian Academy of Sciences
(*Tomsk, Russia*),

¹Tomsk State University
(*Tomsk, Russia*)

S u m m a r y

The process of generation, evolution, and annihilation of optical vortices when a vortical laser beam interacts with a nonlinear medium is analyzed. The study is based on the parabolic wave equation allowing for the refractive index as a function of the light field intensity. Regularities of the vortex spatial evolution, intensity, phase, Umov—Poynting vector, and also the system of singular points for the phase gradient vector field in the beam cross section as functions of the longitudinal coordinate, medium parameters, and acting radiation have been discovered.