

Abstract Submitted  
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**Modeling of Light Propagation and Optical Aberrations with Ray Tracing and Gaussian Beams** SATZHAN SITMUKHAMBETOV, MALIK RAKHMANOV, University of Texas at Brownsville — We built a model to understand light propagation through optical systems using ray tracing and Gaussian beam techniques. We use it for analysis of various optical systems including lenses, mirrors, interferometers, and laser resonators. We do not make paraxial approximation in our ray tracing algorithm. Therefore, the model can be used to study common optical aberrations, such as spherical aberration, coma, or astigmatism. Also, we can use the model to analyze natural optical phenomena, such as rainbow. The model is a useful tool for research and educational purposes.

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