1116-35-1645   **Christoph Koutschan** (`christoph.koutschan@ricam.oeaw.ac.at`), Johann Radon Institute for Computational and, Applied Mathematics, Altenberger Straße 69, A-4040, Linz, Austria, **Erwin Suazo** (`erwin.suazo@utrgv.edu`), 1201 W. University Drive, Edinburg, TX TX 78541, and **Sergei K. Suslov*** (`sks@asu.edu`), Tempe, AZ 85287-1804, Tempe, AZ 85287-1. *Fundamental Laser Modes in Paraxial Optics: From Computer Algebra and Simulations to Experimental Observation.*

We study multiparameter solutions of the inhomogeneous paraxial wave equation in a linear and quadratic approximation which include oscillating laser beams in a parabolic waveguide, spiral light beams, and other important families of propagation invariant laser modes in weakly varying media. (Received September 20, 2015)