

Abstract Submitted
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Radially and azimuthally polarized nonparaxial Bessel beams made simple MARCO ORNIGOTTI¹, Friedrich-Schiller University - Institute of Applied Physics , ANDREA AIELLO, Max Planck Institute for the science of light and Institute for Optics, Information and Photonics, University of Erlangen-Nuernberg — We present a method for the realization of radially and azimuthally polarized nonparaxial Bessel beams in a rigorous but simple manner. This result is achieved by using the concept of Hertz vector potential to generate exact vector solutions of Maxwell's equations from scalar Bessel beams. The scalar part of the Hertz potential is built by analogy with the paraxial case as a linear combination of Bessel beams carrying a unit of orbital angular momentum. In this way we are able to obtain spatial and polarization patterns analogous to the ones exhibited by the standard cylindrically polarized paraxial beams. Applications of these beams are discussed.

¹This work has been carried out while this author was still affiliated with Max Planck Institute for the Science of Light.

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