

Abstract Submitted
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Discontinuities in the Electromagnetic Fields of Vortex Beams from the Complex Source/Sink Model¹ ANDREW VIKARTOFSKY, LIANG-WEN PI, ANTHONY F. STARACE, University of Nebraska-Lincoln — An analytical discontinuity is reported in what was thought to be the discontinuity-free exact nonparaxial vortex beam phasor generated from the complex source/sink model². This discontinuity appears for all odd values of the orbital angular momentum mode. Such discontinuities in the phasor lead to nonphysical discontinuities in the real electromagnetic field components. We will illustrate the source of the discontinuities, and provide graphical evidence of the discontinuous real electric fields for the first and third orbital angular momentum modes. In addition, a simple means of avoiding these discontinuities will be presented.

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²A. April, “Ultrashort, Strongly Focused Laser Pulses in Free Space,” in *Coherence and Ultrashort Pulse Laser Emission*, edited by F. J. Duarte (InTech, 2010) Chap. 16, pp. 355-382.

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