Physical properties of Bessel, Airy and Nondiffracting Beams

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Abstract

Since their introduction 30 years ago, Bessel beams have been the subject of polemic arguments due to their apparent nondiffracting property and others features that are physically and mathematically inconsistent. Nevertheless, they have been the subject of thousands of publications around the world investigating their properties and potential applications. Another family of beams with similar odd features are Airy beams that have been the trend in optical investigations during the last decade. In this talk, based on mathematical physics principles I will discuss the properties of these beams and other families of nondiffracting beams unveiling their real physics clarifying their apparent strange behavior.

Keywords—*Bessel beams, Nondiffracting beams, Beam Propagation, Physics of Beams*

Professional Biography

Prof. Sabino Chávez-Cerda received his PhD from Imperial College of Science, Technology and Medicine, England. Currently he is full time professor at the Natioanl Institute of Astrophysics, Optics and Electronics, México; he is fellow member of the Mexican Academy of Sciences and of the Mexican System of National Researchers. Prof. Chávez-Cerda has been working on the theory of optical beams in linear and nonlinear media and he is recognized internationally for his work in the alternative simplified theory of non-diffracting beams. In 2013 for his leadership and contributions to the theory of exotic beams, the Optical Society of America awarded him the rank of Fellow.

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Any Comments: