Transverse intensity at the tight focus of a second-order cylindrical vector beam

E.S. Kozlova [1,2], S.S. Stafeev [1,2], S.A. Fomchenkov [1,2], V.V. Podlipnov [1,2], V.V. Kotlyar [1,2]
[1] IPSI RAS – Branch of the FSRC "Crystallography and Photonics" RAS,
443001, Samara, Russia, Molodogvardeyskaya 151,
[2] Samara National Research University, 443086, Samara, Russia, Moskovskoye Shosse 34

Abstract

In this paper, an effect of a reverse energy flow at the focus of a second-order cylindrical vector beam which passed through amplitude zone plate was investigated with a scanning near-field optical microscope. A comparison of the intensity distribution detected with a pyramidal metallized cantilever with a hole and the characteristics of the light field calculated using a FDTD method and the Richards-Wolf formulas suggests that the cantilever is sensitive to the transverse intensity component rather than the total intensity or the components of the Poynting vector in the backflow region.

<u>*Keywords*</u>: backflow region, vector beam, scanning near-field optical microscopy, FDTD method.

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Authors' information

Elena Sergeevna Kozlova, (b. 1989) received Master's degree in Applied Mathematics and Informatics in Samara State Aerospace University (2011). She received her PhD in 2014. She is researcher of Laser Measurements laboratory at the Image Processing Systems Institute – Branch of the Federal Scientific Research Centre "Crystallography and Photonics" of Russian Academy of Sciences and assistant of Computer Science department at Samara National Research University. Scientific interests: diffractive optics, FDTD method, near-field optics.
E-mail: *kozlova.elena.s@gmail.com* .

Sergey S. Stafeev (b. 1985) received Master's degree in Applied Mathematics and Physics in Samara State Aerospace University (2009). He received his PhD in 2012. He is researcher of Laser Measurements laboratory at the Image Processing Systems Institute of RAS – Branch of the FSRC "Crystallography and Photonics" RAS. Scientific interests: diffractive optics, FDTD method, near-field optics. E-mail: *sergey.stafeev@gmail.com* . ORCID: 0000-0002-7008-8007.

Sergey Alexandrovich Fomchenkov (b. 1991) graduated (2014) from Samara State Aerospace University, majoring in Applied Physics and Mathematics. Currently he is a post-graduate student in Technical Cybernetics department of Samara National Research University. His current research interests include diffractive optics and optical filters.
E-mail: *s.a.fom@mail.ru* .

Vladimir Vladimirovich Podlipnov, an engineer at Samara National Research University's Lab-35, an engineer of the laboratory of Micro- and Nanotechnology of the Image Processing Systems Institute of the RAS – Branch of the FSRC "Crystallography and Photonics" of the Russian Academy of Sciences. His research interests: mathematical modeling, electron-beam lithography, optimization of etching procedures in microelectronics, diffractive optics and techniques for surface processing and inspection. E-mail: *podlipnovvv@ya.ru* .

Victor Victorovich Kotlyar is a head of Laboratory at the Image Processing Systems Institute (Samara) of the Russian Academy of Sciences – Branch of the FSRC "Crystallography and Photonics" RAS and professor of Computer Science department at Samara National Research University. He received his MS, PhD and DrSc degrees in Physics and Mathematics from Samara State University (1979), Saratov State University (1988) and Moscow Central Design Institute of Unique Instrumentation, the Russian Academy of Sciences (1992). He is SPIE- and OSA-member. He is coauthor of 300 scientific papers, 5 books and 7 inventions. His current interests are diffractive optics, gradient optics, nanophotonics, and optical vortices. E-mail: kotlyar@smr.ru .

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