Numerical and experimental studies of dispersionless multimode beams generated using a DOE

S.A. Borodin[1], A.V. Volkov[1,2], N.L. Kazanskiy[1,2], V.S. Pavelyev[1,2],S.V. Karpeev[1,2], A.N. Palagushkin[1], S.A. Prokopenko[1], A.P. Sergeev[3], A.N.Arlamenko[3]

[1]Samara State Aerospace University(SSAU)

[2]Image Processing Systems Institute of RAS

[3]Institute of Optical Neural Technologiesof RAS

Abstract:

This work is devoted to the study of dispersionless multimode beams generated using diffractive optical elements (DOEs). The results of experiments on the generation and study of dispersionless multimode beams are presented. The results of numerical and field experiments are in mutual agreement.

Keywords: diffraction optical elements, DOE, dispersionless multimode beam

Acknowledgments: This work was supported by a grant from the President of the Russian Federation NSh-1007.2003.1, as well as the Russian-American program "Basic Research and Higher Education" ("BRHE") and grants from the Russian Foundation for Basic Research 04-02-08094 and 05-01-96505.

Citation: Borodin SA, Volkov AV, Kazanskiy NL, Pavelyev VS, Karpeev SV, Palagushkin AN, Prokopenko SA, Sergeev AP, Arlamenko AN. Numerical and experimental studies of dispersionless multimode beams generated using a DOE. Computer Optics 2005; 27: 41-44.

Access full text (in Russian)

References:

[1] Pavelyev VS. Application of remarkable properties of eigensubspaces of light propagation operator in a lenslike medium for solving the problems of computer optics [In Russian]. Computer Optics 2002; 24: 58-61.

[2] Pavelyev VS, Soifer VA. Selection of laser light modes. In Book: Soifer VA, ed. Methods of computer optics. Ch 6. New York: John Willey and Sons Inc; 2002.

[3] Karpeev SV, Paveliev VS, Kazanskiy NL, Soifer VA. Multichannel system for the safe transmission of information over a multimode fiber waveguide [In Russian]. Pat RF for Utility Model N 39242 of March 16, 2004. Russian Bull of Inventions N20, 2004.