

# Qualitative demonstration of spectral diversity filtering using spherical beam volume holograms

Arash Karbaschi, Chaoray Hsieh, Omid Momtahan, Ali Adibi

*Department of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA 30332, USA*  
[arash@ece.gatech.edu](mailto:arash@ece.gatech.edu), [hcf@ece.gatech.edu](mailto:hcf@ece.gatech.edu), [omid@ece.gatech.edu](mailto:omid@ece.gatech.edu), [adibi@ece.gatech.edu](mailto:adibi@ece.gatech.edu)

Michael E. Sullivan, David J. Brady

*Fitzpatrick Center for Photonics and Communication Systems, Duke University, Durham, NC 27708, USA*  
[sullivan@ee.duke.edu](mailto:sullivan@ee.duke.edu), [dbrady@duke.edu](mailto:dbrady@duke.edu)

**Abstract:** We investigate the feasibility of designing spectral diversity filters using spherical beam volume holograms. Our experimental results qualitatively show the separation of the information of different incident wavelength channels using spherical beam volume holograms. The major trade-off in using these holograms is between the degree of spatial spectral diversity and the number of allowed spatial modes (or the divergence angle) of the incident beam.

© 2004 Optical Society of America

**OCIS codes:** (090.7330) Volume holographic gratings; (120.6200) Spectrometers and spectroscopic instrumentation

(C) 2004 OSA

28 June 2004 / Vol. 12, No. 13 / OPTICS EXPRESS 3018