

Twin-Image Elimination for 3-D display Using Optical Scanning Holography

Ting-Chung Poon
Optical Image Processing Laboratory
Virginia Tech
Blacksburg, Virginia 24061
tcpoon@vt.edu
Tel: 540-231-4876
Fax: 540-231-3362

Twin-image elimination has been a topic of current interests as holography is again seriously considered for 3-D image display and 3-D movies [1-6]. In this lecture, I will first briefly review optical scanning holography. The use of optical scanning holography to achieve twin-image elimination will then be discussed and finally an optical system for performing twin-image elimination will be proposed.

1. K. Doh, T.-C. Poon, M. Wu, K. Shinoda, and Y. Suzuki, "Twin-Image Elimination in Optical Scanning Holography," *Laser & Optics Technology*, Vol. 28, pp. 135 -141, (1996)
2. R. Piestun, L. Shamir, B. Wesskamp, and O. Bryngdahl, " On-axis computer generated holograms for 3-D display," *Optics Letters*, 22, 922-924 (1997).
3. S.-G. Kim, B. Lee, and E.-S. Kim, "Removal of bias and the conjugate image in incoherent on-axis triangular holography and real-time reconstruction of the complex hologram," *Applied Optics* 36, 4784-4791 (1997).
4. P. Korecki, G. Materlik, and J. Korecki, " Complex gamma-ray hologram: solution to twin images problem in atomic resolution imaging," *Physical Review Letters*, 86, 1534-1537 (2001).
5. T.-C. Poon, T. Kim, G. Indebetouw, M. H. Wu, K. Shinoda, and Y. Suzuki, "Twin-Image Elimination Experiments for Three-Dimensional Images in Optical Scanning Holography," *Optics Letters*, 25, 215-217 (2000).
6. T-C. Poon, " Three-Dimensional Television Using Optical Scanning Holography," *Journal of Information Display*, 3, 12-16 (2002).