

1077-33-1721

Bonita V. Saunders* (bonita.saunders@nist.gov), National Institute of Standards & Technology, 100 Bureau Drive, Stop 8910, Gaithersburg, MD 20899. *Constructing Interactive 3D Visualizations for the NIST Digital Library of Mathematical Functions.*

In May 2010 the National Institute of Standards and Technology (NIST) launched the NIST Digital Library of Mathematical Functions (DLMF). The DLMF and its associated hardcopy version, NIST Handbook of Mathematical Functions, replace the well-known 1964 NBS Handbook of Mathematical Functions edited by Abramowitz and Stegun. More than 200 of the over 600 figures in the DLMF are interactive 3D visualizations of complex functions. We discuss the challenges of designing and rendering the visualizations using techniques from mesh generation, computer graphics, and approximation theory to capture key function features such as zeros, poles, branch cuts and other singularities. (Received September 20, 2011)