

Abstract Submitted  
for the SES15 Meeting of  
The American Physical Society

**Colorblind-accessible, Sculptural Visual Aids For Math and Physics** CAROLINE BOWEN, Univ of Tennessee, Knoxville — As a student, I am often frustrated by 3D mathematical objects presented through 2D means and the inherent loss of information about the object. To address this, I began designing physical visual aids of concepts in math and physics that are more mathematically explicit than traditional physics demos. This past summer I was inspired by examples in the online Mathematica documentation for the `SliceContourPlot3D` function to create the Plexiglass sculptures of different 3D functions that are the focus of this presentation. Two dimensional contour plots of 3D functions were generated in Mathematica, the contour lines were converted into paths, and the files were exported as .svg's to be processed in Adobe Illustrator for laser cutting the individual contour levels onto separate Plexiglass plates. The color schemes were created by analyzing a colorblind-accessible, continuous rainbow gradient in Adobe Illustrator to generate a set of “base colors” which were then entered into an online gradient generator to obtain a larger, banded gradient. Swatches were then printed and taken to a commercial house paint mixer to have custom paint colors mixed. After painting and drying, the plates were then mounted on rods with nylon spacers separating them.

Caroline Bowen  
Univ of Tennessee, Knoxville

Date submitted: 17 Oct 2015

Electronic form version 1.4