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**Silviana Amethyst\*** (amethyst@uwec.edu), **Samantha Maurer** and **William T O'Brien**. *A 3D printed Arduino powered electronic Barth Sextic*. Preliminary report.

Algebraic surfaces are two-dimensional objects defined by polynomials. With modern software, algebraic surfaces can be visualized by rendering beautiful 3D images. This project stems from research that started at the Institute for Computational and Experimental Research in Mathematics (ICERM) during their Fall 2019 program entitled *Illustrating Mathematics*. The goal of this project was to produce a fully parameterized OpenSCAD model for a snap-together Barth Sextic – a nodal algebraic surface with 65 double points. This digital model enables a variety of puzzles, toys, art, and much larger 3D printed objects, none of which can be done using a one-piece model.

Two undergraduate students at the University of Wisconsin - Eau Claire were engaged with this specific project during the summer of 2020. The students were to research and program an interactive electronic piece of art. The model they influenced has ports for wires between pieces, and coin-slot plugs for carrying Neopixel Jewel 7-pixel RGBW chips. The controller of the model allows a participant to explore the symmetry group of the icosahedron, including rotations and reflections. (Received September 11, 2020)