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Hypercomplex fractals obtained by conjugations

In 2000, D. Rochon used the bicomplex numbers to define a four-dimensional generalization of the classical Mandelbrot set. These numbers were later used to generalize the Multibrot sets to higher dimensions.

In this talk, by adding a conjugate to the iteration that generates the bicomplex Mandelbrot set, I will present a four-dimensional generalization of the Multicorn sets introduced by Dierk Schleicher. I will also establish a rigorous lower bound on the distance from a point to the bicomplex Multicorns, and use it in a ray-marching algorithm to visualize their three-dimensional cross-sections.

This is joint work with Dominic Rochon.