

# Strange Attractors

These earrings are *strange attractors* made with a formula called a *2D quadratic map*,

$$\begin{aligned}x_{n+1} &= C_1 + C_2 x_n + C_3 x_n^2 + C_4 y_n + C_5 y_n^2 + C_6 x_n y_n \\ y_{n+1} &= C_7 + C_8 x_n + C_9 x_n^2 + C_{10} y_n + C_{11} y_n^2 + C_{12} x_n y_n\end{aligned}$$

Each design was made with a different set of the constants  $C_1$ - $C_{12}$ . The shapes are made by *iterating* the formula – a starting point is fed into the formula, which outputs a different point. Then that result is fed back into the formula, over and over, to produce a series of points that can be graphed. The resulting shape appears random and chaotic at first, and is very sensitive to the values of the constants.

Strange attractors are associated with *chaos theory*, *turbulence*, and the *butterfly effect*; math concepts that explain that math cannot predict everything in the world.

Earrings are \$25 (small) or \$35 (large).