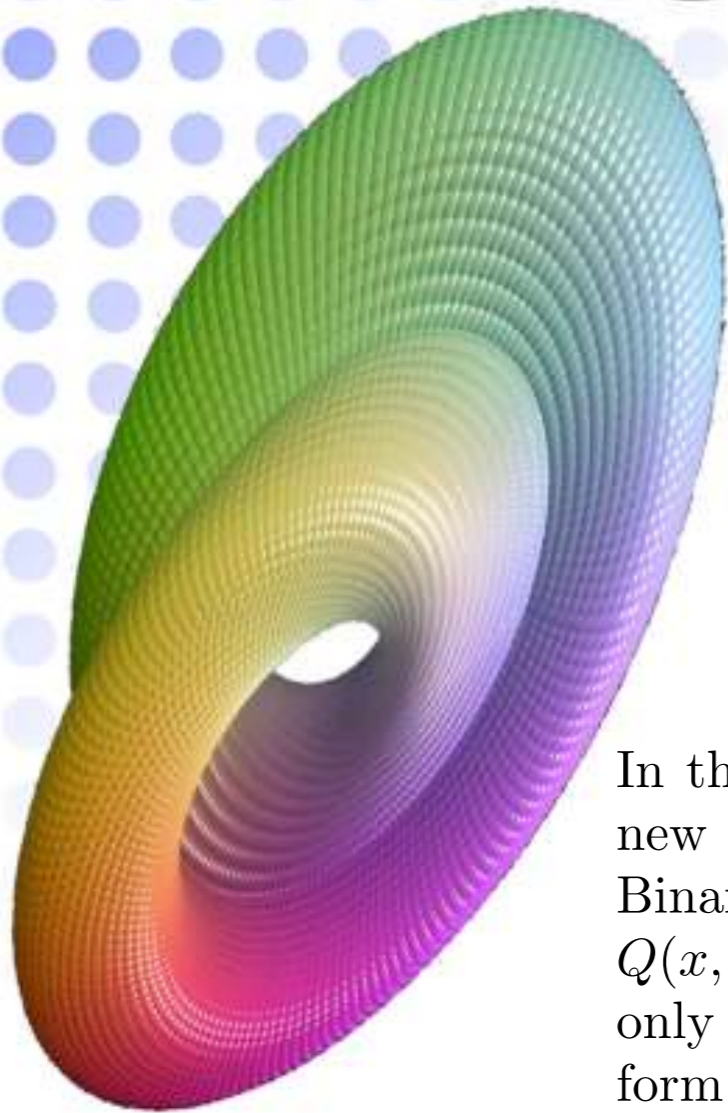


# Michigan Math Club

Meeting [virtually](#) for Fall 2020  
Thursdays at 4pm EDT



## Conway's topographs

Martin Weissman  
UC Santa Cruz

24 September 2020

In the 1990s, John H. Conway developed a new way of seeing binary quadratic forms. Binary quadratic forms are functions, like  $Q(x, y) = x^2 + 7xy - 3y^2$  which are allowed only integer inputs. Each binary quadratic form can be depicted, through Conway's "topograph," as a map of numbers drawn on the hyperbolic plane. By associating the number 0 with "water," one can see things like the infinitude of solutions to the equation  $x^2 - 3y^2 = 1$  just by "following the river." I will try to pay homage to Conway, by introducing his topograph and some generalizations that have shaped my research.

