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Monday, February 24, 2020

Time: 4:00 p.m.

Location: Weber 223

Title: Dynamics on Moduli Spaces

Abstract: A rational function  $f(z)$  with complex coefficients defines a holomorphic map from the Riemann sphere to itself. Some aspects of the global dynamical behavior of  $f$  can be predicted from the orbits, under  $f$ , of the critical points of  $f$  (i.e. points at which the derivative of  $f$  vanishes). If every critical point of  $f$  has a finite orbit, then  $f$  is called post-critically finite (PCF).

Suppose  $\phi$  is a PCF branched covering from a topological two-sphere to itself. One can ask: is  $\phi$  homotopic to a PCF rational function from the Riemann sphere to itself? Thurston answered this question by producing a holomorphic dynamical system  $T(\phi)$  induced by  $\phi$  on the Teichmüller space of complex structures on the topological sphere. Koch found that  $T(\phi)$  descends to an algebraic dynamical system  $H(\phi)$  on the moduli space of configurations of points on the Riemann sphere.

I will introduce 3(+) interconnected dynamical systems: topological ( $\phi$ ), holomorphic ( $T(\phi)$ ) and algebraic ( $H(\phi)$ ).

Host: Renzo Cavalieri

