THE MATHEMATICS OF ENZYME KINETICS

Spring 2020 Tu, Th: 3:00 – 3:55 183 Linde Hall

Dinakar Ramakrishnan and Robert Tanner

Enzymes are omnipresent and help move reactions go faster. Their kinetics involve a very interesting, simple looking, mathematical problem involving a system of first order ordinary differential equations, understandable to freshmen who have taken Ma1a. However, these equations are non-linear in the simplest, quadratic, way, and are not amenable to exact solutions. So one makes some hypotheses, with different choices possible, and tries to understand the consequences. All that is needed about enzymes, substrates and product will be introduced with examples, as well as the underlying mathematics. There will be projects to do, both theoretical and computational. If successful, they will have consequences for enzymes and disease states. These ideas also apply to metallic catalysts.