Xiaoming Mao – University of Michigan

Title: Topological mechanics in Maxwell lattices and continuum

Abstract: Topological mechanics is a new field where concepts of topologically protected states of matter are realized in mechanical systems, leading to robust phenomena from one-way edge waves to soft modes and self-stress states protected by topology. In this talk, I will review a class of topological mechanical systems, Maxwell lattices and continuum, which are characterized by their proximity to mechanical instability. I will discuss recent theoretical and experimental advances in designs of transformable topological mechanical metamaterials based on Maxwell systems, their properties in controlling static and dynamic responses, as well as realization of broadband backscattering-free one-way edge waves.