UNIVERSITY AT ALBANY
State University of New York

College of Arts and Sciences
Department of Mathematics and Statistics

Analysis and Data Science Seminar

Erin Tripp
Hamilton College

Information is Structure: Modeling Knowledge for Recovery and Communication.

Tuesday, November 25, 2025
3:00 P.M. in Catskill 130

Abstract. Inherent structure in natural data allows us to find compact representations of the underlying information and solve otherwise intractable problems. This has been widely applied in compressed sensing and sparse optimization to recover potentially corrupted or incomplete data. Often however, we may not need to recover the data exactly, but only enough information to perform a particular task. Additional knowledge of the task at hand can be leveraged to develop more accurate models and achieve greater compression. In this talk, I will discuss on-going work related to functional compression, which leverages the additional redundancy imposed by a task for compression beyond the limits of recovery. In particular, we will look at the use of conceptual spaces for semantic communication and adversarial example generation for machine learning models.