

ALGEBRAIC GEOMETRY AND COMMUTATIVE ALGEBRA SEMINAR

Speaker: Maya Banks
University of Wisconsin

Date: Wednesday, March 1, 2023

Time: 3:00 PM

Location: 258 Hurley Hall

Zoom URL: NA



Lecture Title:

Boij-Söderberg Conjectures for Differential Modules

Abstract

Boij-Söderberg theory gives a combinatorial description of numerical invariants of modules over the polynomial ring and vector bundles on projective space. We posit that a similar combinatorial description can be given for analogous numerical invariants of graded differential modules, which are natural generalizations of chain complexes. In this talk, we will define graded differential modules over the polynomial ring and their numerical invariants, comparing and contrasting their behavior with that of free resolutions, and explore an analog of the Boij-Söderberg conjectures for this setting. We will discuss some partial results in support of these conjectures, including a duality between the Betti numbers of differential modules and the "absolute Hilbert function" of coherent sheaves on projective space.