

GRADUATE STUDENT SEMINAR

Guest Speaker: Emanuela Marangone
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Date: Tuesday, April 11, 2023

Time: 4:00 PM

Location: 258 Hurley Hall

Zoom URL: notredame.zoom.us/j/93888654312

Lecture Title:

Weak Lefschetz property and non-Lefschetz locus

Abstract

A finite length graded R -module M has the Weak Lefschetz Property if there is a linear element l in R such that the multiplication map $\times l : M_i \rightarrow M_{i+1}$ has maximal rank. The set of linear forms with this property forms a Zariski-open set and its complement is called the non-Lefschetz locus. In the first part of this presentation, I will first focus on the case of Artinian Complete intersections. An important result from Harima, Migliore, Nagel, Watanabe proved that any height three complete intersection has the Weak Lefschetz property. Moreover, Boij, Migliore, Miró-Roig, Nagel proved that for a general Artinian complete intersection the non-Lefschetz locus has the expected codimension and the expected degree. In the second part I will generalize the results for height tree complete intersection to the first cohomology module of a locally free sheaf E of rank 2 over \mathbb{P}^2 . It has been proved by Failla, Flores, Peterson, that these modules have the Weak Lefschetz property. Finally I will show that their non-Lefschetz locus has the expected codimension under the assumption that E is general.