Title: Ulrich bundles, associated subvarieties and a lower bound on the Ulrich complexity of complete intersections.

Abstract: Let $X \subset \mathbb{P}^N$ be a smooth irreducible n-dimensional variety. A well-known conjecture predicts that X always carries an Ulrich vector bundle, that is a bundle $\mathcal{E}$ such that $H^i(\mathcal{E}(-p)) = 0$ for $i \geq 0$ and $1 \leq p \leq n$.

In the talk we will report on two recent results in collaboration with D. Raychaudhury.

The first one is that X carries an Ulrich bundle if and only if X contains a subvariety satisfying certain conditions. The second one is an application of this result to low rank Ulrich bundles on complete intersections of dimension $n \geq 5$ and also on general ones of dimension $n = 4$ with the exception of the $(2, 2)$ case.