

MONADS AND VECTOR BUNDLES ON QUADRICS

Francesco Malaspina (Università degli Studi di Torino)

Abstract

A monad on \mathbb{P}^n or, more generally, on a projective variety X , is a complex of three vector bundles

$$0 \rightarrow \mathcal{A} \xrightarrow{\alpha} \mathcal{B} \xrightarrow{\beta} \mathcal{C} \rightarrow 0$$

such that α is injective and β is surjective.

Rao, Mohan Kumar, Peterson have successfully used this tool to investigate the intermediate cohomology module of a vector bundle on \mathbb{P}^n and give cohomological splitting conditions.

Our aim is to extend this result on smooth quadric hypersurfaces. We give some conditions that are necessary in order to ensure the existence of a monad associated to a bundle \mathcal{E} .

Then we improve Ottaviani's splitting criterion and we obtain the equivalent of the result by Rao, Mohan Kumar and Peterson on a quadric hypersurface. In the last part of the talk we focus our interest on rank two vector bundles on \mathcal{Q}_n ($n > 3$) and we classify the bundles without "inner" cohomology.