

SEMINARIO DI GEOMETRIA

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Ulrich bundles on projective surfaces

An Ulrich bundle on a projective variety is a vector bundle that admits a completely linear resolution as a sheaf on the projective space. Ulrich bundles are semi-stable and the restrictions to any hyperplane section remain semi-stable. This notion originates in classical algebraic geometry, being related to the problem of finding, whenever possible, linear determinantal or linear pfaffian descriptions of hypersurfaces in a complex projective space. Generally, the existence of an Ulrich bundle has nice consequences on the equations of the given variety, specifically, the Cayley-Chow form is the determinant of a matrix of linear forms in the Pluecker coordinates. We discuss recent results on the existence of rank-two Ulrich bundles on surfaces. The talk is mainly based on joint works with G. Farkas, A. Ortega, L. Costa, R. M. Miro-Roig.

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