

## SEMINARIO DI GEOMETRIA

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### Rank 2 ACM bundles on complete intersection Calabi-Yau threefolds

We consider the problem of classifying all the rank 2 ACM bundles on smooth Calabi-Yau threefolds which are also complete intersections. We prove the existence of such vector bundles in some cases. Previously were known only partial results by the works of Chiantini, Madonna, Rao and Mohan Kumar (see [1], [2] and [3]). We obtain new geometric properties of the curves corresponding to rank 2 ACM bundles (by Serre correspondence). These follow from minimal free resolutions of curves in suitably chosen fourfolds (containing Calabi-Yau threefolds as hypersurfaces). We give the idea leading to the existence of some bundles on quintic threefold conjectured in [1] and [3].

#### RIFERIMENTI BIBLIOGRAFICI

- [1] Chiantini, L., Madonna, C.: ACM bundles on a general quintic threefold. *Le Matematiche* **55**, vol. 2, 239-258 (2000)
- [2] Madonna, C.: ACM vector bundles on prime Fano threefolds and complete intersection Calabi-Yau threefolds. *Rev. Roumaine Math. Pures Appl.* **47**, vol.2, 211-222 (2002)
- [3] Mohan Kumar, N.: Rao A.P.: ACM bundles, quintic threefolds and counting problems. *Central European Journal of Mathematics* **10**(4), 1380-1392 (2012)