



Centro de Matemática
Universidade do Porto

Geometry and Topology seminar

Date. November 27th, 15h30

Place. Room 0.04

Speaker. Antonio De Nicola (CMUC, Coimbra)

Title. Hard Lefschetz theorem for Vaisman manifolds.

Abstract. It is well known that in any compact Kähler manifold the exterior multiplication by a suitable power of the symplectic form induces isomorphisms between the de Rham cohomology spaces in complementary degrees. This is the celebrated Hard Lefschetz Theorem [2]. In my talk I will present a version of the Hard Lefschetz theorem for compact locally conformal Kähler manifolds with parallel Lee vector field, known as Vaisman manifolds. Our result is based on the Hard Lefschetz theorem for Sasakian manifolds [1] and the fact that any compact Vaisman manifold is the mapping torus of a compact Sasakian manifold [3].

References

- [1] B. Cappelletti-Montano, A. De Nicola, I. Yudin, *Hard Lefschetz theorem for Sasakian manifolds*, Journal of Differential Geometry **101** (2015), 47–66.
- [2] S. Lefschetz, *L'analysis situs et la géométrie algébrique*, Gauthiers-Villars, Paris, 1924.
- [3] L. Ornea, M. Verbitsky, *Structure theorem for compact Vaisman manifolds*, Math. Res. Lett. **10** (2003), 799–805.