



Leibniz
Universität
Hannover

Oberseminar Institut für Algebraische Geometrie

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**Manifolds with vanishing Chern classes and some
questions by Severi/Baldassari.**

We give a negative answer to a question posed by Severi in 1951, whether the Abelian Varieties are the only manifolds with vanishing Chern classes. We exhibit Hyper-elliptic Manifolds which are not Abelian varieties (nor complex tori) and whose Chern classes are zero not only in integral homology, but also in the Chow ring. We prove moreover the surprising result that Bagnera de Franchis manifolds (quotients T/G where T is a torus and G is cyclic) have topologically trivial tangent bundle. Motivated by a more general question addressed by Mario Baldassarri in 1956, we discuss the Hyperelliptic Manifolds, the Pseudo-Abelian Varieties introduced by Roth, and we introduce a new notion, of Manifolds Isogenous to a k -Torus Product: the latter have the last k Chern classes trivial in rational homology and vanishing Chern numbers. We show that the latter class is the correct substitute for some incorrect assertions by Enriques, Dantoni, Roth and Baldassarri: in dimension 2 these are the surfaces with K_X nef and $c_2(X) = 0$. A similar picture does not hold in higher dimension, unless we consider manifolds (isogenous to manifolds) whose tangent (resp. cotangent bundle) has a trivial summand. We survey old and new results on Kaehler manifolds whose tangent (resp. cotangent bundle) has a trivial summand, and pose some open problems.

Donnerstag, 08.12.2022, 16:30-17:30, Raum B302

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Alle Interessierten sind herzlich eingeladen.