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4. Algebraic Geometry

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Moduli spaces of stable 2-vector bundles over ruled surfaces

Let $\pi : X \to C$ be a ruled surface. We define two numerical invariants d and r for an algebraic 2-vector bundle with fixed Chern classes c_1 and c_2 and let $M(c_1, c_2, d, r)$ be the set of isomorphism classes of bundles with fixed invariants c_1, c_2, d, r. We give necessary and sufficient conditions for the non-emptiness of $M(c_1, c_2, d, r)$. Then, we get effective bounds of the Chern class c_2 for the non-emptiness of moduli spaces of stable 2-vector bundles over X. Part of these results is joint work with M. Aprodu.

References: M. Aprodu, and V. Brînzănescu, C. R. Acad. Sci. Paris **323** (1996), 627–630; C. R. Acad. Sci. Paris **325** (1997), 295–300.