

**Chang, Mei-Chu**

**Stable rank 2 reflexive sheaves on  $\mathbb{P}^3$  with small  $c_2$  and applications.** (English) Zbl 0558.14015  
*Trans. Am. Math. Soc.* 284, 57-89 (1984).

The paper in question investigates the coarse moduli spaces of stable rank-2 reflexive sheaves on  $\mathbb{P}^2$  with Chern classes  $c_1 = -1, 0, c_2 \leq 3$ , and  $c_3$ , which have not been studied before. [For the remaining cases cf. *R. Hartshorne*, *Math. Ann.* 238, 229-280 (1978; [Zbl 0411.14002](#)) and *Math. Ann.* 254, 121-176 (1980; [Zbl 0437.14008](#)); *R. Hartshorne* and *I. Sols*, *J. Reine Angew. Math.* 325, 145-152 (1981; [Zbl 0448.14004](#)), and *G. Ellingsrud* and *S. A. Strømme*, *Math. Ann.* 255, 123-137 (1981; [Zbl 0448.14001](#)).] - For  $c_2 \leq 2$  it is shown that the moduli spaces are nonsingular and rational varieties, whose dimension is computed. - For  $c_2 = 3$  they are irreducible and in most cases the associated reduced schemes are unirational. There are some applications to curves of low degree in  $\mathbb{P}^3$ : It is shown that curves in  $\mathbb{P}^3$  with certain degree and genus are of maximal rank, sometimes even projectively normal, and that the corresponding Hilbert scheme is irreducible and unirational. A consequence is the well known fact that the moduli variety of curves of genus  $g$  is unirational for  $g = 5, 6, 7$ , and 8.

Reviewer: [H.Lange](#)

**MSC:**

- 14F05 Sheaves, derived categories of sheaves, etc. (MSC2010)
- 14D20 Algebraic moduli problems, moduli of vector bundles
- 14H10 Families, moduli of curves (algebraic)
- 14D22 Fine and coarse moduli spaces
- 32L10 Sheaves and cohomology of sections of holomorphic vector bundles, general results

Cited in **1** Review  
Cited in **10** Documents

**Keywords:**

vector bundles; reflexive sheaves; classification of coarse moduli spaces of stable rank-2 reflexive sheaves on projective 3-space; Chern classes; moduli variety of curves

**Full Text:** [DOI](#)