Bolognese, Barbara; Huizenga, Jack; Lin, Yinbang; Riedl, Eric; Schmidt, Benjamin; Woolf, Matthew; Zhao, Xiaolei

**Nef cones of Hilbert schemes of points on surfaces.** (English) [Zbl 1346.14011]

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This paper studies the nef cone of the Hilbert schemes of points on smooth projective surfaces with irregularity 0. The main idea is to utilize the Bayer-Macri construction of ample line bundles over the moduli spaces of Bridgeland semistable objects.

The ample cone and the nef cone are fundamental invariants of algebraic varieties, but their computations for Hilbert schemes of points on surfaces lack a general principle. The recent breakthrough by A. Bayer and E. Macri [J. Am. Math. Soc. 27, No. 3, 707–752 (2014; Zbl 1314.14020)] on the study of Bridgeland stability conditions implies a possible approach to this problem, as the Hilbert schemes of points on surfaces are the examples of moduli spaces of Bridgeland semistable objects. In this sense, the motivation of this paper is a natural one.

Stability manifolds, namely the spaces of stability conditions, are still mysterious objects and remain lots of things to study. One of the known facts is the concrete description of the slice in the stability manifold parametrized by a half-plane where the stability condition is given by a pair of an ample divisor and an effective divisor. On this slice one has an explicit chart of the wall-chamber structure. The computation method of nef divisor is based on such a description.

This paper gives good presentation together with brief preliminaries in Section 2 and explicit computations in Section 3. The reviewer recommend it for those interested in applications of the works by Bayer and Macri [loc. cit.; Invent. Math. 198, No. 3, 505–590 (2014; Zbl 1308.14011)].

Reviewer: Shintaro Yanagida (Nagoya)

**MSC:**

- 14C05 Parametrization (Chow and Hilbert schemes)
- 14E30 Minimal model program (Mori theory, extremal rays)
- 14J29 Surfaces of general type
- 14J60 Vector bundles on surfaces and higher-dimensional varieties, and their moduli

**Keywords:**

Hilbert schemes; surfaces; nef cone; ample cone; birational geometry; Bridgeland stability

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