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Let R be a Noetherian local domain. In his paper appeared in Invent. Math. (2004), with a mild condition on R , Kurano defined and proved that $\overline{G_0(R)}$ is a finitely generated torsion-free Abelian group where $\overline{G_0(R)}$ denotes the Grothendieck group of finitely generated R -modules, modulo the numerical equivalence. Hence $\overline{G_0(R)} \times_{\mathbb{Z}} \mathbb{R}$ is a finite dimensional vector space over \mathbb{R} .

In this talk, we will introduce the notion of the *Cohen-Macaulay cone* of a Cohen-Macaulay local domain R . It is a cone spanned by the image of all maximal Cohen-Macaulay R -modules in the finite dimensional vector space $\overline{G_0(R)} \times_{\mathbb{Z}} \mathbb{R}$ just mentioned.

This new notion is motivated by the study of the Hilbert-Kunz functions. Some of the basic properties of the Cohen-Macaulay cone will be presented. We will also show that examples of the Hilbert-Kunz functions of certain shape can be produced. The existence of the desired ring is proved by using Segre products to construct a Cohen-Macaulay ring whose Chow group is of certain simplicity. This is a joint work with Kazuhiko Kurano. (Received January 20, 2015)