野田代数セミナーのお知らせ

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題　目：「On the classification of cubic planar Cremona maps」

日　時：2025 年 6 月 25 日（水）　16:30 〜 17:30

場　所：野田キャンパス 4 号館 3 階数理科学科セミナー室

概要

We are interested in birational self-maps of the projective plane over the field $\mathbb{C}$ of complex numbers. Such maps are typically written as $f : \mathbb{P}^2 \dashrightarrow \mathbb{P}^2$ and are known as plane Cremona maps. The collection of all such maps forms a group, called the plane Cremona group and denoted by $\mathrm{Bir}(\mathbb{P}^2)$. The generators of $\mathrm{Bir}(\mathbb{P}^2)$ have been known for over a century, by the famous Noether-Castelnuovo theorem. In this talk, we focus on the classification of plane Cremona maps of degree 3, also known as cubic planar Cremona maps, up to automorphisms of the plane. To do so, we introduce a new discrete invariant for cubic planar Cremona maps, called enriched weighted proximity graph, which encodes some properties of the base locus of the map. Our classification fills some gaps in the previous known classification, which was given by Dominique Cerveau and Julie Déserti. The results presented are part of a joint work with Alberto Calabri.

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