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- Alberto Calabri & Nguyen Thi Ngoc Giao** — On the classification of cubic planar Cremona maps 625-676
- Thomas Gauthier & Gabriel Vigny** — The geometric dynamical Northcott property for regular polynomial automorphisms of the affine plane . 677-698
- Chunhui Liu** — On the global determinant method ..... 699-741
- Laura Capuano, Nadir Murru & Lea Terracini** — On the finiteness of  $\mathfrak{P}$ -adic continued fractions for number fields ..... 743-772
- Pierre-Emmanuel Caprace, Adrien Le Boudec & Nicolás Matte Bon** — Piecewise strongly proximal actions, free boundaries and the Neretin groups ..... 773-795

SOCIÉTÉ MATHÉMATIQUE DE FRANCE

Pages 625-796



## Sommaire

<b>Alberto Calabri &amp; Nguyen Thi Ngoc Giao</b> — Sur la classification des transformations cubiques planes de Cremona .....	625-676
<b>Thomas Gauthier &amp; Gabriel Vigny</b> — La propriété dynamique géométrique de Northcott pour les automorphismes polynomiaux réguliers du plan affine .....	677-698
<b>Chunhui Liu</b> — Autour de la méthode globale de déterminant .....	699-741
<b>Laura Capuano, Nadir Murru &amp; Lea Terracini</b> — Sur la finitude des fractions continues $\mathfrak{P}$ -adiques pour les corps de nombres .....	743-772
<b>Pierre-Emmanuel Caprace, Adrien Le Boudec &amp; Nicolás Matte Bon</b> — Actions fortement proximales par morceaux, frontières libres et groupes de Neretin .....	773-795

# Contents

<b>Alberto Calabri &amp; Nguyen Thi Ngoc Giao</b> — On the classification of cubic planar Cremona maps .....	625-676
<b>Thomas Gauthier &amp; Gabriel Vigny</b> — The geometric dynamical Northcott property for regular polynomial automorphisms of the affine plane .....	677-698
<b>Chunhui Liu</b> — On the global determinant method .....	699-741
<b>Laura Capuano, Nadir Murru &amp; Lea Terracini</b> — On the finiteness of $\mathfrak{P}$ -adic continued fractions for number fields .....	743-772
<b>Pierre-Emmanuel Caprace, Adrien Le Boudec &amp; Nicolás Matte Bon</b> — Piecewise strongly proximal actions, free boundaries and the Neretin groups .....	773-795

## ON THE CLASSIFICATION OF CUBIC PLANAR CREMONA MAPS

BY ALBERTO CALABRI & NGUYEN THI NGOC GIAO

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ABSTRACT. — We give a fine and complete classification of cubic planar Cremona maps, up to automorphisms of the plane. For this purpose, 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 Cremona map.

RÉSUMÉ (*Sur la classification des transformations cubiques planes de Cremona*). — Nous donnons une classification complète et fine des transformations cubiques planes de Cremona, modulo l'action des automorphismes du plan. Dans ce but, nous introduisons un nouvel invariant discret pour les transformations cubiques planes de Cremona, appelé graphe de proximité pondéré enrichi, qui décrit certaines propriétés du lieu de base de la transformation de Cremona.

### 1. Introduction

We work over the field  $\mathbb{C}$  of complex numbers. We denote by  $\mathbb{P}^2$  the projective plane and by  $\text{Bir}(\mathbb{P}^2)$  the *plane Cremona group*, that is, the group of birational maps  $\mathbb{P}^2 \dashrightarrow \mathbb{P}^2$ . Generators of  $\text{Bir}(\mathbb{P}^2)$  are very well known, for over a century, thanks to the classical works of Noether and Castelnuovo, namely

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