

## CONVEX FOLIATIONS OF DEGREE 5 ON THE COMPLEX PROJECTIVE PLANE

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**Abstract:** We show that, up to automorphisms of  $\mathbb{P}_{\mathbb{C}}^2$ , there are fourteen homogeneous convex foliations of degree 5 on  $\mathbb{P}_{\mathbb{C}}^2$ . We establish some properties of the Fermat foliation  $\mathcal{F}_0^d$  of degree  $d \geq 2$  and of the Hilbert modular foliation  $\mathcal{F}_H^5$  of degree 5. As a consequence, we obtain that every reduced convex foliation of degree 5 on  $\mathbb{P}_{\mathbb{C}}^2$  is linearly conjugated to one of the two foliations  $\mathcal{F}_0^5$  or  $\mathcal{F}_H^5$ , which is a partial answer to a question posed in 2013 by D. Marín and J. V. Pereira. We end with two conjectures about the Camacho–Sad indices along the line at infinity at the non radial singularities of the homogeneous convex foliations of degree  $d \geq 2$  on  $\mathbb{P}_{\mathbb{C}}^2$ .

**2010 Mathematics Subject Classification:** 37F75, 32S65, 32M25.

**Key words:** convex foliation, homogeneous foliation, radial singularity, Camacho–Sad index.