

DEGREE OF THE FIRST INTEGRAL OF A PENCIL IN \mathbb{P}^2 DEFINED BY LINS NETO

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Abstract: Let \mathcal{P}_4 be the linear family of foliations of degree 4 in \mathbb{P}^2 introduced by A. Lins Neto, whose set of parameter with first integral $I_p(\mathcal{P}_4)$ is dense and countable. In this work, we will compute explicitly the degree of the rational first integral of the foliations in this linear family, as a function of the parameter.

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Key words: Poincaré problem, pencil of foliations, first integral.