

On the algebraic integrability of a plane foliation

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Assuming that the Mori cone of the surface obtained resolving the dicritical singularities of an algebraic plane foliation \mathcal{F} is (finite) polyhedral, it will be described a procedure to decide whether \mathcal{F} has a rational first integral and to compute it in the affirmative case. Also it will be given a way to detect the assumed condition from the proximity relations among the blown-up points in the resolution process (in particular, the condition holds when the number of these points is less than 9). This provides a contribution to the understanding of the Poincaré problem from a new point of view.