INVARIANT SURFACES FOR TORIC TYPE FOLIATIONS IN DIMENSION THREE

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Abstract: A foliation is of toric type when it has a combinatorial reduction of singularities. We show that every toric type foliation on $(\mathbb{C}^3, 0)$ without saddle-nodes has invariant surface. We extend the argument of Cano–Cerveau for the nondicritical case to the compact dicritical components of the exceptional divisor. These components are projective toric surfaces and the isolated invariant branches of the induced foliation extend to closed irreducible curves. We build the invariant surface as a germ along the singular locus and those closed irreducible invariant curves. The result of Ortiz-Bobadilla–Rosales-Gonzalez–Voronin about the distribution of invariant branches in dimension two is a key argument in our proof.