On Global Deformation of Singular Holomorphic Foliations on $\mathbb{P}^n$.

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Abstract

Let $\mathcal{F}(k;n)$ be the space of codimension one holomorphic foliations of degree k on $\mathbb{P}^n$. In this work we prove that, if $n \geq 3$, then the set of foliations $\mathcal{F}$ of $\mathbb{P}^n$ which can be written as $\mathcal{F} = F^*(\mathcal{G})$, where $\mathcal{G}$ is a foliation in $\mathbb{P}^2$ of degree $d \geq 2$ which fixes three lines in $\mathbb{P}^2$ in general position and $\{F : \mathbb{P}^n \to \mathbb{P}^2\}$ of degree ν which is given by $F = (F_0^\alpha : F_1^\beta : F_2^\gamma)$, where $deg(F_0).\alpha{=}deg(F_1).\beta{=}deg(F_2).\gamma{=}\nu$, $(\alpha, \beta, \gamma) \neq (1,1,1) \in \mathbb{N}^3$ and g.c.d $(\beta.\gamma, \alpha.\gamma, \alpha.\beta) = 1$ is a generic branched map of degree ν, that means that F satisfies a generic condition, is a irreducible component of the space

$$\mathcal{F}((\nu[(d-1) + \frac{1}{\alpha} + \frac{1}{\beta} + \frac{1}{\gamma}] - 2, n)).$$