Foliations singular along a curve

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Abstract:
A foliation of dimension one in P3 admits in general only finitely many singularities. Given a family W of curves, we consider the subvarieties $\Sigma(W,d)$ in the projective space $\mathbb F(3,d)$ of foliations of degree d,defined by the condition that the singular locuscontain some member of W.

We show that the degree of $\Sigma(W,d) \subset\mathbb F(3,d)$ is given by a polynomial $p_W(d)$ for all $d>>0$. We make it explicit in a few examples.These examples seem to suggest that the degree of the polynomial $p_W(d)$ is equal to twice the dimension of W,though we only manage to bound it by thrice that dim.

We include also a formula for the number of isolated singularities of a foliation general among those which are singular along a given curve.