Holomorphic foliations singular along a positive dimensional subscheme

Israel Vainsencher (Universidade Federal de Minas Gerais, Brazil)

Abstract:

A general one-dimensional foliation in the complex projective space has finitely many singularities. For an appropriately good family of subschemes in Pn, we study the loci in the space of foliations of degree d defined by the requirement that the singularities contain a member of the family. We give a formula for the dimensions of such loci. We show that their degrees are expressed by a polynomial in d. We compute it explicitly in a few examples. Next we provide a formula for the number of isolated singular points of a foliation containing a prescribed positive dimensional subscheme in its singular scheme under mild assumptions. We include a result devised by Steven L. Kleiman on a theorem of Bertini suitable for sections of vector bundles with rank equal to the dimension of the base, needed to validate the formulas.