

Singularities in Lefschetz fibrations

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Motivated by an important arithmetic analogue, a conjectural inequality between discriminant and conductor of elliptic curves, L. Szpiro first proved an estimate for the average number of singularities per singular fibre in a semistable family of (elliptic) curves. Recent generalizations include higher-genus families and non-algebraic Lefschetz fibrations of symplectic 4-manifolds. Indeed it is topologically impossible to concentrate arbitrarily many singularities in a given number of singular fibres. This implies Szpiro-type inequalities with topological consequences. I will present joint work with D. Kotschick on this topic.