Charles Favre

BIRATIONAL SYMMETRIES OF HOLOMORPHIC PLANE FOLIATION

(joint work with Serge Cantat)

The aim of this talk is to classify all invertible rational maps of the complex plane $\phi : \mathbf{C}^2 \to \mathbf{C}^2$, which preserve a holomorphic singular foliation. We show that either ϕ preserve a family of rational or elliptic curves (the foliation is a fibration); or $\phi(x, y) = (x^a y^b, x^c y^d)$ is a monomial map (and the foliation is given by the integral curves of a differential equation of the form $dy/dx = -\lambda y/x$).

The proof relies on arguments of both local and global nature. Locally one has to study the map ϕ around its indeterminacy points, and the foliation at its singular points. The global arguments relies on the classification of algebraic foliations of Mac-Quillan-Brunella-Mendès as explained in [B1], and on the study of birational mappings initiated in[DF].

References

[B1] M. Brunella *Birational geometry of foliations.* Monographia de matematica. IMPA. 2000. http://www.impa.br/Publicacoes/Monografias/index.html

[B2] M. Brunella *Minimal models of foliated algebraic surfaces.* Bull. Soc. Math. France 127 (1999), no. 2, 289–305

[DF] J. Diller & C. Favre *Dynamics of bimeromorphic maps of surfaces.* A paraitre dans Amer. J. of Math. (2001). Preprint Orsay 2000-52.