Mathematics Department Colloquium

Organizer(s): Kenneth Ribet

Thursday, 4:10–5:00pm, 60 Evans

Mar. 12 **Kiran Kedlaya**, MIT

Formal structure of flat connections

This talk will give an example of ideas from number theory being deployed in the service of complex analytic geometry. We consider the problem of the formal classification of flat meromorphic connections on a complex manifold. We will first recall the answer in the one-dimensional case (the Turrittin–Levelt theorem) and its relevance to the asymptotic behavior of solutions of meromorphic differential equations (the Stokes decomposition). We will then describe a higher-dimensional analogue, whose proof is much subtler: it uses analytic geometry not just over the complex numbers, but also over certain complete nonarchimedean fields (e.g., formal power series). The methods we use are ultimately inspired by Dwork's study of the p-adic variation of zeta functions of algebraic varieties.