TOPOLOGY SEMINAR

# Michael Kapovich (UC Davis)

## Universality in 3-dimensional topology

Tuesday, January 15th, 4:00pm, in 383-N

*Abstract*: We are all used to the fact that (real) 3-dimensional manifolds are very "special", e.g., their fundamental groups are very limited, word problem for fundamental groups and the homeomorphism problem are algorithmically solvable, and so on. In the talk I will discuss "universality" for 3-dimensional manifolds ("Murphy's Law" in Ravi Vakil's terminology), where things could be "as bad as possible". For instance, I will explain why singularities of SL(2)-character varieties of closed 3-dimensional manifolds could be "arbitrary" (subject to some natural constraints). If time permits, I will explain how to use the same 3-dimensional universality to construct irreducible complex-projective 3-folds, whose singularities are normal crossings and Whitney umbrellas, with prescribed finitely-presented fundamental groups. The main source of universality (in my talk) is a (relatively) recent theorem of Panov and Petrunin about 3-dimensional hyperbolic orbifolds.