

GEOMETRIC AND ASYMPTOTIC GROUP THEORY  
WITH APPLICATIONS  
2016

---

Ilya Kapovich

University of Illinois at Urbana-Champaign

*Cannon-Thurston maps for hyperbolic free group extensions*

Wednesday, June 15, 2016

Stevens Institute of Technology, Kidde 228

10:40 AM

*Abstract:*

Let  $F_N$  be a free group of finite rank  $N \geq 3$  and let  $\Gamma \leq \text{Out}(F_N)$  be a finitely generated "convex cocompact" subgroup, that is, such that the orbit map from  $\Gamma$  to the free factor complex of  $F_N$  is a quasi-isometric embedding. Assume also that  $\Gamma$  is purely atoroidal. In this case  $\Gamma$  determines an extension group  $E_\Gamma$  of  $\Gamma$  with the quotient  $E_\Gamma/F_N = \Gamma$ , and it is known by a result of Dowdall and Taylor that the group  $E_\Gamma$  is then word-hyperbolic. By a general result of Mitra the inclusion of  $F_N$  in  $E_\Gamma$  extends to a continuous surjective  $F_N$ -equivariant map between their hyperbolic boundaries  $j : \partial F_N \rightarrow \partial E_\Gamma$ , called the *Cannon-Thurston map*. We analyze the structure of this map and prove that the map is finite-to-one, with multiplicity at most  $2N$ . The talk is based on a joint paper with Spencer Dowdall and Sam Taylor.