Manhattan Algebra Day

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Approximation of geodesics in metabelian groups

Friday, December 9, 2011
CUNY Graduate Center, Room C205
5:00 pm

Abstract:
It is known that the bounded Geodesic Length Problem in free metabelian groups is NP-complete (in particular, the Geodesic Problem is NP-hard). We construct a 2-approximation polynomial time deterministic algorithm for the Geodesic Problem. We show that the Geodesic Problem in the restricted wreath product of a finitely generated non-trivial group with a finitely generated abelian group containing $\mathbb{Z}^2$ is NP-hard and there exists a Polynomial Time Approximation Scheme for this problem. We also show that the Geodesic Problem in the restricted wreath product of two finitely generated non-trivial abelian groups is NP-hard if and only if the second abelian group contains $\mathbb{Z}^2$.

Joint work with Olga Kharlampovich.