Arpan Kabiraj

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Research Interests
- Low-dimensional Topology.
- Geometric Group Theory.
- First order theory of groups with geometric origin.

Brief Summary of Research

My principle areas of research are topological, combinatorial and geometric group theory. I am primarily interested in the study of geometric, combinatorial, computational and algebraic aspects of geometric objects namely curves on hyperbolic surfaces arising naturally in the study of low-dimensional topology and Riemann surface theory. In this context I am interested in certain problems related to Teichmüller space, moduli space of representations and skein algebras associated to loops on surfaces. I am also interested in quasimorphisms of subgroups of diffeomorphism groups of surfaces. Apart from geometry, I am interested in logic, in particular first order theory of groups which occurs naturally while studying geometric objects, e.g., Braids groups, Mapping class groups etc

Recent Publications
- Equal angles of intersecting geodesics for every hyperbolic metric, New York Journal of Mathematics, Volume 24 (2018) 167-181.
- Elementary equivalence in Artin groups of finite type, (with T. V. H. Prathamesh & Rishi Vyas), International Journal of Algebra and Computation, Volume 28 (02), March 2018.
- On the entropy norm on the group of diffeomorphisms of closed oriented surface (with Michael Brandenbursky), Journal of Topology and Analysis, Vol. 12, No. 1 (2020) 105-111.
- Center of the Goldman Lie algebra, Algebraic & Geometric Topology 16 (2016) 2839–2849.
- Lie bracket of undirected closed curves on a surface (with Moira Chas), to appear in Trans. Amer. Math. Soc (DOI:https://doi.org/10.1090/tran/8541).