HARVARD UNIVERSITY 17 Oxford Street Cambridge, MA 02138



Tuesday, April 6, 2021, at 10:00 (Boston) 15:00 (UK/Eire) 16:00 (C.Europe) 22:00 (China) Mathematical Picture Language Seminar

Zoom at: <u>https://harvard.zoom.us/j/779283357?pwd=MitXVm1pYUIJVzZqT3IwV2pCT1ZUQT09</u> Conjugation of words, self-intersections of planar curves, and non-commutative divergence Anton Alekseev, University of Geneva

Abstract: The space spanned by homotopy classes of free oriented loops on a 2manifold carries an interesting algebraic structure (a Lie bialgebra structure) due to Goldman and Turaev. This structure is defined in terms of intersections and selfintersections of planar curves. In the talk, we will explain a surprising link between the Gaoldman-Turaev theory and the Kashiwara-Vergne problem on properties of the Baker-Campbell-Hausdorff series. Important tools in establishing this link are the non-commutative divergence cocycle and a novel characterization of conjugacy classes in free Lie algebras in terms of cyclic words. The talk is based on joint works with N. Kawazumi, Y. Kuno and F. Naef.

