

Adam Mickiewicz University
Faculty of Mathematics and Computer Science

GEOMETRY AND TOPOLOGY SEMINAR

11 AM, Friday, May 5, 2017
B1-37, Collegium Mathematicum

Speaker: Arturo Espinosa Baro (Adam Mickiewicz University)

Title: Topological complexity of subgroups of Artin's braid groups

Abstract:

Topological complexity, introduced by Farber during his study of the robot motion planning problem, is a numerical homotopy invariant, quite similar in spirit to the classic Lusternik–Schnirelmann category, with TC being significantly more difficult to compute. It is often possible to achieve such computation combining upper and lower cohomological bounds, but a class of spaces for which the computation of TC presents a particular challenge are the Eilenberg–MacLane spaces of torsion-free discrete groups. Farber requested a description of the TC of such spaces in terms of algebraic properties of the base group, and that objective seems to be out of reach at the present. In this context, M. Grant and D. Recio-Mitter, using a generalization of the notion of Poincaré duality, the Fadell–Neuwirth fibrations, and previous bounds of TC due to Grant and Grant-Lupton–Oprea, obtained bounds for certain subgroups of the braid groups, and, in particular, computed the TC of subgroups of the n strand braid groups which fixes any two strands. We will briefly introduce the notion of TC, and will proceed to describe the process followed by Grant and Recio-Mitter.