THE WEIZMANN INSTITUTE OF SCIENCE
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Seminar in Geometry and Topology

Room 261 , Ziskind Building
on Tuesday, Dec 23, 2014
at 16:00

NOTE UNUSUAL PLACE AND TIME

A. Gabrielov
Purdue University

Classification of spherical quadrilaterals (part 2)

Abstract:

A spherical quadrilateral (membrane) is a bordered surface homeomorphic to a closed disc, with four
distinguished boundary points called corners, equipped with a Riemannian metric of constant
curvature 1, except at the corners, and such that the boundary arcs between the corners are
geodesic. We discuss the problem of classification of these quadrilaterals and perform the
classification up to isometry in the case that at most three angles at the corners are not multiples of
Pi. This is a very old problem, related to the properties of solutions of the Heun's equation (an
ordinary differential equation with four regular singular points). The corresponding problem for the
spherical triangles, related to the properties of solutions of the hypergeometric equation, has been
solved by Klein, with some gaps in Klein's classification filled in by Eremenko in 2004. The general
quadrilateral case remains open. This is joint work with V. Tarasov (IUPUI). The first part is by A.
Eremenko (Purdue), 13:00-14:00, room 1. The second is by A. Gabrielov (Purdue), 16:00-17:15, room
261.