Clasiffication of edge - transitive maps

Maria Nedelova

In my talk, I present a new method for clasification of edge-transitive maps. Map, in topological sense, is 2-cellular embeding of a graph to some compact connected surface. A map $\mathcal{M}$ is edge-transitive if its group of automorphisms, $Aut(\mathcal{M})$, acts transitively on the edges of the underlying graph of $\mathcal{M}$. There are two methods for classification of edege-transite maps. Original clasiffication is based on a quotient maps $\bar{\mathcal{M}} = \mathcal{M}/Aut(\mathcal{M})$. Quotient map od an edge transitive map $\bar{\mathcal{M}} = \mathcal{M}/Aut(\mathcal{M})$ is a map on an (quotient) orbifold with one edge. Classification based on unpublished article of Karabas-Nedela using quotients $\bar{\mathcal{M}} = Aut^{+}(\mathcal{M})$ by a group of orientation-preserving automorfisms$Aut^{+}(\mathcal{M})$. The group of orientation-preserving automorphisms is a subgroup $Aut^{+}(\mathcal{M})$ of index at most two in $Aut(\mathcal{M})$. It follows that the quotient map of an edge-transitive map, $\bar{\mathcal{M}} = \mathcal{M}/Aut^{+}(\mathcal{M})$, is a map on an (quotient) orbifold with at most two edges. There are exactly 8 such quotient maps sitting on orbifolds with at most 4 singular points, seven are spherical and one is toroidal. That gives us a classification of edge-transitive maps on an orientable surface of genus $g > 1$. Compared to the method used by Orbanic et al. (2011) we control the genus g of the underlying surface by choosing a proper g-admissible orbifold. Based on results of my magister thesis, we were able to design such extension of the classification KN, that the extended classification KN is an equivalent to original classification used by Orbanic et al. (2011) . Due to this fact, we are now able to merge the advantages of both classifications.