

WYKŁAD WYDZIAŁOWY

w ramach seminarium

ARYTMETYCZNA GEOMETRIA ALGEBRAICZNA

(organizatorzy: Grzegorz Banaszak, Piotr Krasoń)

Czwartek 9 marca 2017, godz. 16:00, sala 212

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ON REAL AND SINGULAR NERVES OF MODULI SPACE OF COMPACT RIEMANN SURFACES AND OF ITS HYPERELLIPTIC LOCUS

Streszczenie:

The moduli space of compact Riemann surfaces has some distinguished important loci like singular, real and hyperelliptic ones to list just the most relevant of them. These loci are covered by certain canonical subsets having often nicer properties and being better understood than these loci themselves. The point is however that these subsets may overlap which became an essential issue when one try to study these loci within ?local to global principle? or one try to view these loci as objects constructed by gluing together certain nicer and better understanding pieces. The nerve being certain simplicial complexes introduced a hundred years ago by Alexandrov seems to be the most relevant instrument

in such situation. Recall that we are talking about the nerve $\mathcal{N}(\mathcal{U})$ of a topological space covered by the family \mathcal{U} of open subsets, say indexed by the set I , which stand for the vertices $\mathcal{N}(\mathcal{U})$ of and a collection i_0, i_1, \dots, i_n of indices forms an n -simplex if the corresponding sets $U_{i_0}, U_{i_1}, \dots, U_{i_n}$ have a nonempty intersection. One, however, has to be careful not to overestimate the meaning of this concept. The point is that the nerve constructed for a generic cover of a topological space with open subsets, does not reflect the properties of the space itself. The usual remedy for it is either considering co-final, in some sense, covers or passing to the colimit with certain objects associated with nerves of such covers and the classical construction of Čech cohomologies can be considered as the flagship example here. However, one more way remains, which we shall follow in this talk, where we consider certain canonical covers and we study properties of their nerves, considered as formal instruments, also having in mind to get some feedbacks concerning initial spaces. In this survey we focus attention on geometrical, topological and homological properties of resulting real and singular nerves of the whole moduli space and its hyperelliptic locus. Our talk is designed, in principle, as a survey but we are also planning to give an introduction to the combinatorial approach in study of conformal and anti-conformal automorphisms of compact Riemann surfaces which actually stand behind as well as the samples of proofs. The talk will be given in Polish but the beamers that we shall use will be in English.