

# **On the signed number of circuits of even length in nonoriented graphs**

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A chord diagram is a one-face map. To a chord diagram, a simple graph can be associated, which is the intersection graph of the diagram. The chord diagram structure allows one to assign signs to circuits of even length in this graph in a natural way. The difference between the number of positive and negative circuits of given length  $2k$  is a graph invariant. This invariant is closely related to the weight system (in other words, to the Vassiliev knot invariants) associated to the Lie algebra  $\mathfrak{sl}_2$ . It happens that this invariant admits a natural extension to arbitrary graphs, including those that are not intersection graphs of chord diagrams. This fact leads to a number of questions concerning the existence of more graph invariants related to  $\mathfrak{sl}_2$  and other Lie algebras.

The talk is based on a joint paper with E. Kulakova, T. Mukhutdinova and G. Rybnikov (2014).