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**Alexander Mednykh\*** ([smedn@mail.ru](mailto:smedn@mail.ru)), Sobolev Institute of Mathematics, Novosibirsk State University, Novosibirsk, 630090, Russia. *Automorphisms of graphs and Riemann surfaces acting with fixed points*. Preliminary report.

Let  $X$  be a finite connected graph, possibly with loops and multiple edges. We provide each edge of the graph including loops by two possible orientations. An automorphism group of a graph acts *harmonically* if it acts freely on the set of directed edges of the graph. Following M. Baker and S. Norine define a genus  $g$  of the graph  $X$  to be the rank of the first homology group. A finite group acting harmonically on a graph of genus  $g$  is a natural discrete analogue of a finite group of automorphisms acting on a Riemann surface of genus  $g$ . In the present report, we give a sharp upper bound for the size of cyclic group acting harmonically on a graph of genus  $g \geq 2$  with a given number of fixed points. Similar results, for closed orientable surfaces, were obtained by T. Szemberg, I. Farkas and H. M. Kra.

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