1035-55-1471 **Andrey Lazarev** (al179@leicester.ac.uk), Department of Mathematics, University of Leicester, Leicester, LE1 7RH, England, and **Alexander A. Voronov*** (voronov@umn.edu), School of Mathematics, University of Minnesota, 206 Church St SE, Minneapolis, MN 55455-0488.
Graph homology: Koszul and Verdier duality.

We show that Verdier duality for certain sheaves on the moduli spaces of graphs associated to Koszul operads corresponds to Koszul duality of operads. This in particular gives a conceptual explanation of the appearance of graph cohomology of both the commutative and Lie types in computations of the cohomology of the outer automorphism group of a free group. Another consequence is an explicit computation of dualizing sheaves on spaces of metric graphs, thus characterizing to which extent these spaces are different from oriented orbifolds. We also provide a relation between the cohomology of the space of metric ribbon graphs, known to be homotopy equivalent to the moduli space of Riemann surfaces, and the cohomology of a certain sheaf on the space of usual metric graphs. (Received September 19, 2007)