Research Interests

M. Gekhtman

Our ongoing collaboration with M. Shapiro and A. Vainshtein is focused on applications of Poisson geometry to cluster algebras. The main goal is to undertake a systematic study of multiple cluster structures in coordinate rings of a certain varieties of importance in algebraic geometry, representation theory and mathematical physics and study an interaction between corresponding cluster algebras. Important examples include simple Lie groups, homogeneous spaces, configuration spaces of points, and are related to discrete and continuous integrable systems. On last subject, we also collaborate with S. Tabachnikov. Among the problems we are currently working on are

- cluster structures on simple Lie groups compatible with Poisson-Lie structures associated with the Belavin-Drinfeld classification;

- inverse problems for directed nets on surfaces of higher genus;

- generalizations of the pentagram map.