Elliptic dynamical quantum group $E_{\tau,h}(\mathfrak{gl}_2)$ and
elliptic equivariant cohomology of cotangent bundles of Grassmannians.

Alexander Varchenko

The torus T equivariant elliptic cohomology defines a functor $Ell_T : \{T - \text{spaces}\, X\} \to \{\text{schemes}\}$. For example, for the cotangent bundle of a Grassmannian the scheme $Ell_T(T^*\operatorname{Gr}(k,n))$ is some explicitly given sub-scheme of $S^kE \times S^{n-k}E \times E^n \times E^2$ with coordinates $t_1,\dots,t_k$, $s_1,\dots,s_{n-k}, z_1,\dots,z_n, y, \lambda$, where t_i, s_j correspond to the Chern roots of the two standard vector bundles over the Grassmannian, $z_1,\dots,z_n, y$ correspond to the torus parameters, λ is the dynamical parameter also called the Kähler parameter, and E is an elliptic curve.

I will define a class of line bundles on the scheme $\cup_{k=0}^n Ell_T(T^*\operatorname{Gr}(k,n))$ such that the operator algebra of the elliptic dynamical quantum group $E_{\tau,y}(\mathfrak{gl}_2)$ will act on sections of those line bundles (a generator of the operator algebra will send a section of such a line bundle to a section of possibly another line bundle). That construction is an analog of the Yangian $Y(\mathfrak{gl}_2)$ action on the direct sum $\oplus_{k=0}^n H_T^*(T^*\operatorname{Gr}(k,n))$ of equivariant cohomology.

This is a joint work with G.Felder and R.Rimanyi.