Seminar/Talk

Bethe subalgebras in Yangians, their degenerations and crystals

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Let g be a complex simple finite-dimensional Lie algebra and G be the adjoint Lie group with the Lie algebra g. To every group element C from G, one can assign a commutative subalgebra B(C) in the Yangian Y(g), which is responsible for the integrals of the (generalized) XXX Heisenberg magnet chain. For regular semisimple C, the images of Bethe subalgebras in tensor products of fundamental representations are equivariant quantum cohomology rings of Nakajima quiver varieties. We describe the degenerations of Bethe subalgebras in terms of "shift of argument" subalgebras (or big subalgebras) in universal enveloping algebras. Furthermore, using these degenerations, we construct a natural structure of affine crystals on spectra of B(C) in Kirillov-Reshetikhin g-modules in type A. We conjecture that such a construction exists for arbitrary g and gives Kirillov-Reshetikhin crystals. The talk is based on joint results with Aleksei Ilin, Vasily Krylov, and Inna Mashanova-Golikova.

Wednesday, July 16, 2025 01:00pm - 03:00pm
Office Bldg West / Ground floor / Heinzel Seminar Room (I21.EG.101)

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