

Seminari de Geometria Algebraica 2015/2016 (UB-UPC)

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<http://www.ub.edu/sga/>

Quantum integrable systems in generalised
cohomology theories

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The standard torus action on a vector spaces \mathbb{C}^n induces the action on the partial flag varieties in \mathbb{C}^n . The scalar matrices act trivially on the partial flags, hence in fact we have an action of the torus of one dimension less. We will show how this "missed in action" one dimensional torus shows up in the "hidden" action of the Yang-Baxter algebra of a certain quantum Integrable system from statistical physics on the equivariant cohomology of partial flag varieties and related varieties. This missed one dimensional torus is responsible for appearance of the spectral parameter in the language of quantum groups. The first example of this phenomenon as far as we know was discovered in the work of Maulik and Okounkov. In their case, in particular, the Yangian acts on the equivariant cohomology of cotangent spaces to Grassmanians. We also present other examples of these type hidden symmetries from the recent work of C. Korff, C. Stroppel, P. Zinn-Justin.
