

CRYSTALLIZING COMPACT SEMISIMPLE LIE GROUPS

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Abstract:

The theory of crystal bases, due to Kashiwara and Lusztig, is a means of simplifying the representation theory of semisimple Lie algebras by passing through quantum groups. Varying the parameter q of the quantized enveloping algebras, we pass from the classical theory at $q = 1$ through the Drinfeld-Jimbo algebras at $0 < q < 1$ to the crystal limit at $q = 0$. At this point, the main features of the representation theory (matrix coefficients, Clebsch-Gordan coefficients, branching rules) crystallize into purely combinatorial data described by crystal graphs. In this talk, we will describe what happens to the C^* -algebra of functions on a compact semisimple Lie group under the crystallization process, leading to higher-rank graph algebras. This is joint work with Marco Matassa.