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Title: Asymptotic Results in Noncompact Semisimple Lie Groups

Abstract: We study the convergence of various sequences in noncompact connected semisimple Lie groups. Antezana, Pujals, and Stojanoff showed that the iterated Aluthge sequence in $M_n(\mathbb{C})$ converges. We extend the result in a Lie groups context and show that the corresponding sequence converges. We also extend a result of Rutishauser on the convergence of the Bruhat iteration in $GL_n(\mathbb{C})$ to a Lie group. Finally, we present some preliminary results on the behavior of the Bruhat sequence in a real Lie group.

Olga Bershtein

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Title: Geometrical Realizations of Quantum Harish-Chandra Modules

Abstract: Harish-Chandra modules of real Lie groups are among celebrated objects in representation theory. Their geometrical realization were obtained through several approaches and become a well developed topic. We investigate quantum analogs for noncompact real groups (we consider quantum universal enveloping algebras endowed with a certain involution). We obtain ‘geometrical realizations’ for their Harish-Chandra modules on quantum homogeneous spaces.

Špela Špenko

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Title: On the Image of a Noncommutative Polynomial

Abstract: Let $n \geq 2$ be an integer and let F be a field. By the image of a (noncommutative) polynomial $f = f(x_1, \dots, x_d)$ we mean the set $\{f(a_1, \dots, a_d) \mid a_1, \dots, a_d \in M_n(F)\}$. We will give some partial answers to Kaplansky's question which subsets of $M_n(F)$ can be images of noncommutative polynomials. Lvov's question whether the image of a multilinear polynomial is a vector space will be also touched upon.