

İSTANBUL ANALYSIS SEMINARS

QUANTUM GELFAND PAIRS

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Abstract: A group subgroup inclusion of locally compact groups $H \subset G$ is said to be a Gelfand pair if the convolution algebra of H bi-invariant continuous real valued functions on G is abelian. The inclusions $S_n \subset S_{n+1}$, $S_n \subset H_n$ and $H_n \subset S_{2n}$ where S_n is the symmetric group and H_n the hyperoctahedral group are the best known examples of Gelfand pairs. When an inclusion is a Gelfand pair, one can deduce several facts about the representation theory of the larger group from that of the smaller and as such, Gelfand Pairs are a useful tool in representation theory.

There are very natural ‘quantum’ analogues of the classical symmetric, hyperoctahedral, unitary and orthogonal groups as well as a natural notion of what it means for two quantum groups to be a Gelfand Pair. In joint work with Kürşat Aker, I was able to show that the quantum analogues of several classical Gelfand pairs are indeed Quantum Gelfand pairs.

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