One day meet on Operator algebras
Venue: IMSC, Chennai
Dec 21 2016

1. 10.00-11.00 am

   Speaker: Nigel Higson, Penn State University

   Title : On Weyl's Spectral Decomposition Theorem.

   Abstract: Early in his career, Hermann Weyl examined and solved the problem of decomposing a function on a half-line as a continuous combination of the eigenfunctions of a Sturm-Liouville operator with asymptotically constant coefficients. Weyl's theorem served as inspiration for Harish-Chandra in his pursuit of the Plancherel formula for semisimple groups, and for this and other reasons it continues to be of interest. I'll explain a new approach to Weyl's theorem that seems to fit well with representation theory. This is joint work with Qijun Tan.

2. 11.00 - 11.30 am ——— Coffee break

3. 11.30 am - 12.15 pm

   Speaker: Indrava Roy, IMSc, Chennai

   Title: Higson-Roe exact sequence and secondary ℓ^2-invariants

   Abstract: In this talk we give an overview of the Higson-Roe exact sequence for discrete groups, also known as the analytic surgery sequence, and explain its relation with secondary invariants of type rho. Using the machinery of equivariant Roe-algebras we shall also outline a proof of some rigidity results of ℓ^2-rho-invariants, extending earlier work of Higson and Roe. This is joint work with M.-T. Benameur.

4. 12.15 pm - 1 pm

   Speaker: Bipul Saurabh, IMSc, Chennai

   Title : q-invariance of quantum quaternion spheres.

   Abstract : The C^*-algebra of continuous functions on the quantum quaternion sphere H^q_{2n} can be identified with the quotient algebra $C(SP_q(2n)/SP_q(2n-2))$. In commutative case, the topological space $SP(2n)/SP(2n-2)$ is homeomorphic to the odd dimensional sphere S^{4n-1}. In this talk, we prove the noncommutative analogue of this result. Using homogeneous C^*-extension theory, we prove that the C^*-algebra $C(H^{2n}_q)$ is isomorphic to the C^*-algebra $C(S^{4n-1}_q)$. This further implies

that for different values of q in $[0, 1)$, the C^*-algebras underlying the noncommutative spaces H_q^{2n} are isomorphic.

5. 1pm - 2pm ——— Lunch break

6. 2.15 pm - 3.00 pm

   Speaker: Issan Patri, CMI, Chennai

   Title : Automorphisms of Compact Quantum Groups

   Abstract: We will discuss non-commutative dynamical systems of the type (C(G),Γ), where G is a compact quantum group, Γ is a discrete group and the action is by automorphisms which commute with the comultiplication. We will obtain combinatorial conditions for ergodicity, mixing, etc, discuss some specific examples and explore some interesting connections to masas in compact quantum group von-Neumann algebras. Joint work with Kunal Mukherjee.

7. 3.00 pm - 3.30 pm ——— Coffee break

8. 3.30 pm - 4.15 pm

   Speaker: S.P. Murugan, CMI, Chennai

   Title : E_0^P-semigroups and Product systems

   Abstract : Let P be a closed convex cone in $\mathbb{R}^n$. Assume that P is spanning and pointed. Let $\alpha := \{\alpha_x : x \in P\}$ be a semigroup of normal $*$-endomorphisms of $B(\mathcal{H})$. We show that the product system associated to α is in fact a product system in Arveson's sense and the E_0^P-semigroup up to cocycle conjugacy can be recovered from the product system.

9. 4.15 pm - 5.00 pm

   Speaker: Keshab Chandra Bakshi, IMSc, Chennai.

   Title: Pimsner Popa bases and Intermediate subfactor.

   Abstract: We examine bases for finite index inclusion of II_1 factors. These bases behave nicely with respect to basic construction towers. We obtain a characterization, in terms of bases, of so-called basic constructions. Finally we use this to show one interesting application to intermediate subfactor.