

abstract

LIE GROUPS, REPRESENTATIONS AND DISCRETE MATH

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

Consider an affine building of type A_{n-1} , which is a simplicial complex of dimension n . For $n=1$, this is a tree, which we will require to be homogeneous.

Consider the space of complex valued functions on the vertices of the building, and then consider the algebra A of invariant, finitely-supported difference operators. Here invariant can usually be taken to mean invariant with respect to the group of automorphisms on the building. (But for $n=2$, it can happen that there are not enough automorphisms. In that case one must define invariant differently.)

The algebra A is commutative. In fact, it is isomorphic to a polynomial algebra of degree n over the complexes. As such, it has an algebraic spectrum corresponding to affine n -space.

Since the elements of A are finitely supported, they preserve the space of ℓ^2 functions. Viewed this way, A is a self-adjoint operator algebra, and may be completed to a C^* -algebra. One can identify concretely the spectrum of this operator algebra as a subset of the algebraic spectrum of A .

The talk will be strictly expository: most of what's to be discussed was published by Tamagawa in 1963, and the rest by MacDonald in 1968. Moreover, because I like to draw pictures, discussion will center on the cases $n=1$ (trees) and $n=2$.

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