

TATA INSTITUTE OF FUNDAMENTAL RESEARCH
Homi Bhabha Road, Mumbai-400 005

School of Mathematics

24 February, 2012

MATHEMATICS COLLOQUIUM

C.S. Rajan will speak on

‘On the irreducibility of irreducible characters of simple Lie algebras’

at 04.00 p.m. on Thursday, 1 March, 2012, in the **Lecture Room (AG-69)** of the Institute.

D.B. Sawant

Abstract

We establish an irreducibility property for the characters of finite dimensional, irreducible representations of simple Lie algebras (or simple algebraic groups) over the complex numbers, i.e., that the characters of irreducible representations are irreducible after dividing out by (generalized) Weyl denominator type factors.

For $SL(r)$ the irreducibility result is the following: let $\lambda = (a_1 \geq a_2 \geq \cdots a_{r-1} \geq 0)$ be the highest weight of an irreducible rational representation V_λ of $SL(r)$. Assume that the integers $a_1 + r - 1, a_2 + r - 2, \cdots, a_{r-1} + 1$ are relatively prime. Then the character χ_λ of V_λ is strongly irreducible in the following sense: for any natural number d , the function $\chi_\lambda(g^d)$, $g \in SL(r, \mathbb{C})$ is irreducible in the ring of regular functions of $SL(r, \mathbb{C})$.

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