TATA INSTITUTE OF FUNDAMENTAL RESEARCH

School of Mathematics   29 November, 2018

<u>N O T I C E</u>

Thorsten Heidersdorf from Max Planck Institute for Mathematics, Germany, will speak on

'Tensor product decomposition for the general linear supergroup $GL(m|n)$'

at 04.00 p.m. on Tuesday, 04 December, 2018 in the **Lecture Room (AG-77)** of the Institute.

Milind Pilankar

Abstract

$\mathfrak{gl}(n)$ denote the Lie algebra of the general linear group $GL(n)$. Given two finite dimensional irreducible representations $L(\lambda), L(\mu)$ of $\mathfrak{gl}(n)$, its tensor product decomposition $L(\lambda) \otimes L(\mu)$ is given by the Littlewood-Richardson rule.

The situation becomes much more complicated when one replaces $\mathfrak{gl}(n)$ by the general linear Lie superalgebra $\mathfrak{gl}(m|n)$. The analogous decomposition $L(\lambda) \otimes L(\mu)$ is largely unknown. Indeed many aspects of the representation theory of $\mathfrak{gl}(m|n)$ are more akin to the study of Lie algebras and their representations in prime characteristic or to the BGG category $\mathcal{O}$. I will give a survey talk about this problem and explain why some approaches don't work and what can be done about it. This will give me the chance to speak about a) the character formula for an irreducible representation $L(\lambda)$, b) Deligne's interpolating category $Rep(GL_t)$ for $t \in \mathbb{C}$ and c) the process of semisimplification of a tensor category.

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