



Theoretical Statistics and Mathematics Unit, Kolkata
INDIAN STATISTICAL INSTITUTE

SEMINAR

Date: August 13, 2025

Time: 02:00 PM

MODE: Online

Meeting link: <https://meet.google.com/avg-bhah-vnr>

TITLE:

On a question of Matassa and Yuncken

SPEAKER:

Ayan Dey

Stat-Math Unit, ISI Delhi

ABSTRACT:

The crystal lattice $O_t^{\{A_0\}}(G)$ associated with the quantum coordinate ring $O_t(G)$ of a connected, simply connected complex Lie group G with Lie algebra \mathfrak{g} was originally introduced by Kashiwara within the framework of crystal basis theory. More recently, Matassa and Yuncken constructed a related object, $O_t^{\{A_0\}}(K)$, in the context of studying the crystal limit of quantum coordinate rings, where K denotes the compact real form of G . They posed the natural question of whether the inclusion $O_t^{\{A_0\}}(G) \subseteq O_t^{\{A_0\}}(K)$ holds.

In this talk, we affirmatively resolve this question by demonstrating that such an inclusion indeed exists. Our proof relies on a clever selection of crystal bases for each integrable simple module of the quantum group $U_t(\mathfrak{g})$. Moreover, we provide a minimal set of generators for both $O_t^{\{A_0\}}(G)$ and $O_t^{\{A_0\}}(K)$, for some specific classes of simple Lie algebras.

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