
Discrete Analysis Seminar

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Quantum Bruhat graphs and tilted Richardson varieties

The quantum Bruhat graph is introduced by Brenti-Fomin-Postnikov to study structure constants of the quantum cohomology ring of the flag variety, with very rich combinatorial structures. In this talk, we provide an explicit formula for the minimal degree appearing in the quantum product of any two Schubert classes. Building upon that, we obtain an Ehresmann-like criterion for the tilted Bruhat order studied by Brenti-Fomin-Postnikov. These results motivate the definition of tilted Richardson varieties, which provide geometrical interpretations of tilted Bruhat orders. Tilted Richardson varieties are indexed by pairs of permutations and generalize Richardson varieties in the flag variety. Moreover, they equal the two-pointed curve neighborhoods of opposite Schubert varieties studied by Buch-Chaput-Mihalcea-Perrin. We establish several geometrical properties of tilted Richardson varieties including a Deodhar-like decomposition. This is a joint work with Jiyang Gao and Shiliang Gao.

Date: 7th March, 2024

Time: 4:00pm – 5:00pm

Location: 262, Science Building



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