JOINT COMBINATORICS SEMINAR — ALGEBRAIC GEOMETRY/ANALYTIC NUMBER THEORY SEMINAR

September 12 (Fri), 4:00–4:50pm, Snow 408

Speaker: Professor Yasuyuki Kachi (KU)

Title: Interplay between Combinatorics, Number Theory and Algebraic Geometry — Asymptotic formula, renormalization and anomaly

Abstract: I would like to share one particularly noteworthy formula that my co-author P. Tzermias and I stumbled across that lies at the crossroads of combinatorics and analytic number theory, of which Stirling's formula serves as an archetype. An alternate, more casual, title of the talk would be "factorial numbers m! and beyond".

This naturally grew out of the context of the recent resurgence of the study of analytic continuations of Riemann's zeta function $\zeta(s)$, to which we made a contribution which I reported in my May 1st talk, which I will briefly revisit.

Most importantly, the formula invokes a new method to redefine the pre-existing notion of 'renormalization' of products a là Riemann and Lerch. This appears to be an uncharted territory.

I suggest open problems in this direction, along with viable approaches to those problems, some of which I hope will potentially attract Ph.D. degree seekers. Naturally, the talk is accessible to graduate students (and apt undergraduate students).

Key words: Kurokawa tensor product. Functional identity and integral representation of Hurwitz-Lerch's zeta function.