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Growth in nilpotent Lie rings

I will talk about a new class of combinatorially defined rational functions: generalised Igusa functions. It turns out that these functions can be used to provide formulae for ideal zeta functions of certain nilpotent Lie rings. Generalised Igusa functions also satisfy a self-reciprocity property upon inversion of variables. I will discuss how the study of these functions unifies and generalises numerous previous results in the area. Generalised Igusa functions also allow us to establish a special case of a conjecture of Grunewald, Segal, and Smith from 1988.

This is joint work with Michael Schein and Christopher Voll.