Mathematics and CS Seminar

Symmetrisation and the Feigin--Frenkel centre

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Let g be a complex reductive Lie algebra. The algebra $S(g)^g$ of symmetric g-invariants and the centre Z(g) of the enveloping algebra U(g) are polynomial rings in the rank of g generators. There are several isomorphisms between these rings, including the symmetrisation map, which exists also for the inline-dimensional Lie algebras. However, in case of an infinite-dimensional Lie algebra q, one may need to complete U(q) in order to replace Z(q) with an interesting related object. Roughly speaking, the Feigin--Frenkel centre arises as a result of such completion in case of an affine Kac--Moody algebra. From 1982 until 2006, this algebra existed as an intriguing black box with many applications. Then explicit formulas for its elements appeared first in type A, later in all other classical types, and it was discovered that the FF-centre is the centraliser of the quadratic Casimir element. We will discuss the type-free role of the symmetrisation map in the description of the FF-centre and present new explicit formulas for its generators in types B, C, D, and G_2.

Thursday, May 11, 2023 01:00pm - 03:00pm

Heinzel Seminar Room (I21.EG.101), Office Building West, ISTA

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