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The face monoid associated to a Kac–Moody group and its infinite Renner monoid

The face monoid and its coordinate ring are obtained from the category of integrable representations of the category \mathcal{O} of a symmetrizable Kac–Moody algebra by a Tannaka reconstruction. The face monoid contains the Kac–Moody group as open dense unit group. Its idempotents are related to the faces of the Tits cone. It has similar structural properties as a reductive algebraic monoid, but its Renner monoid is infinite. In my talk I give some results on:

- (a) Actions of the Renner monoid on the Coxeter complex of the Weyl group and induced actions of the face monoid on the building of the Kac–Moody group.
- (b) The parabolic partition of the Renner monoid, the parabolic partition and the adjoint quotient map of the face monoid.
- (c) The combinatorics of the order relations on the Renner monoid, which are obtained by the closure relations of the Bruhat and Birkhoff cells.