Quantized 6-vertex model on a torus and tetrahedron equations

Rei Inoue

The quantized 6-vertex model (q-6v) was introduced by Kuniba-Matsuike-Yoneyama, by replacing the Boltzmann weight of the 6-vertex model with the elements of the q-Weyl algebra. This gives a (2+1)-dimensional lattice model whose symmetry is governed by the tetrahedron equation, a higher dimensional version of the Yang-Baxter equation.
In this talk, we discuss the symmetry of the q-6v model. It turns out that for a class of graphs on a torus (including square lattice) integrability is established by applying various tetrahedron equations.
It is also related to the quantum cluster algebra for a specific quiver.