Title: Correlation functions from difference equations

Author: Bernard Nienhuis

Abstract:
The Yang-Baxter equation has led Baxter to introduce Z-invariance. This concept is introduced for partition sums of statistical models on irregular lattices which consist of a set of intersecting lines. Aside from the geometry there is an additional irregularity in the fact that each of the lines carries a parameter, and the Boltzmann weights depend on these parameters. But then the Yang-Baxter equation ensures that the partition sum is strictly invariant for internal rearrangement of the intersection of the lines. This invariance can be used to derive q-difference equations for observables on the lattice. This method was used by Jimbo, Miwa and Nakayishiki for the eight-vertex model on the infinite lattice. More recently it was used to obtain the information about the combinatorial point of the six-vertex model. The method will be presented together with some of its applications.