Combinatorial Yang–Baxter

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This is a rehearsal for a talk I will give at a meeting on Combinatorics and Physics in Cardiff the week after the end of term.

A combinatorial (or set-theoretic) solution of the Yang–Baxter equation is a set X (usually finite) and a function $r : X^2 \to X^2$ satisfying the *braiding condition* on X^3. With some other natural assumptions, combinatorial solutions give rise to abstract groups and permutation groups, related by homomorphism. The groups are soluble, and the derived length of the abstract group is one greater than that of the permutation group.

This is joint work with Tatiana Gateva-Ivanova, but I will be concentrating on the parts where I had some input.