



SIMPLE SOLUTIONS OF THE YANG–BAXTER EQUATION OF CARDINALITY p^n

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Abstract: For every prime number p and integer $n > 1$, a simple, involutive, non-degenerate, set-theoretic solution (X, r) of the Yang–Baxter equation of cardinality $|X| = p^n$ is constructed. Furthermore, for every positive integer m which is not square-free and is not a square of a prime number, a non-simple, indecomposable, irretractable, involutive, non-degenerate, set-theoretic solution (X, r) of the Yang–Baxter equation of cardinality $|X| = m$ is constructed. A recent question of Castelli on the existence of singular solutions of certain type is also answered affirmatively.

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Key words: Yang–Baxter equation, set-theoretic solution, indecomposable solution, simple solution, brace.