On some connections between set-theoretic solutions of the Yang Baxter equation, matrices and noncommutative rings

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In 2005, Wolfgang Rump discovered some connections between noncommutative ring theory and set-theoretic solutions of the Yang-Baxter equation. In this talk we explore some further connections between noncommutative rings, matrices, braces and set-theoretic solutions of the Yang-Baxter equation. We also present some new results on the prime radical and locally nilpotent ideals in noncommutative rings, and discuss their connection with the Yang-Baxter equation.