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Quadratizations of differential equations by Gleb Pogudin

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Abstract. Quadratization problem is, given a system of ODEs with polynomial right-hand side, transform the system to a system with quadratic right-hand side by introducing new variables. Such transformations have been used, for example, as a preprocessing step by model order reduction methods and for transforming chemical reaction networks. We will present a recent algorithm for computing such transformations and its extensions including systems with control and of varying dimension. The talk is based on joint works with Andrey Bychkov, Opal Issan, and Boris Kramer.