Rank-1 approximation of Jacobians in DAESOL II

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The integration of Differential Algebraic Equations (DAEs) requires the repeated solution of linear systems of the dimension of the state space that consists of the differential and algebraic variables. For that purpose the system matrix has to be reevaluated and factorized frequently to ensure convergence of the iterative method. This results in an effort cubic in the dimension of the state space. By updating a factorization of the system matrix with a rank-1 matrix, the approximation of the system matrix should be improved such that recomputations and factorizations can be avoided. For the approximation Broyden's method and the 'two-sided rank-1 update' (TR1) method are used. It is applied to the package DAESOL II.

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