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Abstracts of Short Communications and Posters

Section:

16. Applications

1991 MS Classification: 65, 80

Borchardt, Jürgen, Weierstrass Institute, Berlin, Germany:

Large-scale Dynamic Process Simulation of Chemical Plants.

The numerical solution of initial value problems for large systems of differential algebraic equations (DAE's) arising from industrial applications in dynamic process simulation of chemical plants and their realization on parallel computers will be considered. Based on a hierarchical modular modeling the systems of DAE's are structured into subsystems. Merging subsystems to blocks and extending the corresponding systems of nonlinear equations resulting from backward differentiation formulas, block–structured Newton–type methods are used for their solution on parallel computers. Results from dynamic simulation runs for large real life distillation plants will be presented.

Reference: J. Borchardt, F. Grund, D. Horn, Parallelized methods for large nonlinear and linear systems in the dynamic simulation of industrial applications, to appear in *Surveys on Mathematics for Industry*.