

Parallel-in-time optimization of induction motors

*Stephanie Friedhoff*¹, Jens Hahne¹, Björn Polenz², Iryna Kulchytska-Ruchka², Stefan Ulbrich², and Sebastian Schöps²

¹University of Wuppertal

²Technical University of Darmstadt

Parallel-in-time (PinT) methods were developed to accelerate time-domain solution of evolutionary problems using modern parallel computer architectures. In this talk, we incorporate one of the efficient PinT approaches, in particular, the asynchronous truncated multigrid-reduction-in-time algorithm, into a bound constraint shape optimization applied to an induction machine. Calculation of an optimal motor geometry with respect to its efficiency in the steady state is thus parallelized at each iteration of the optimization algorithm. As a result, a more efficient motor model is obtained about 11 times faster compared to optimization using standard sequential time stepping.

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