

# EINLADUNG

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Titel: Parallel Algorithms for Verification of Large Systems

## Abstract:

Despite heavy investigation, automated verification of reactive systems is still limited by the combinatorial blow-up called state space explosion. We present a method to push frontiers further by efficiently utilizing the combined resources---memory and computing power---of clusters of workstations.

Specifically, we present parallel model-checking algorithms for the alternation-free fragment Lmu1 of the mu-calculus, which we then extend to the fragment Lmu2 that allows one alternation of minimal and maximal fixed-point operators. LTL and CTL\* can be encoded in this fragment, thus we obtain parallel model-checking algorithms for practically important temporal logics.

Our solution is based on a characterization of this problem in terms of two-player games. We exhibit the structure of their game graphs and show that we can iteratively work with game graphs that have the same special structure as the ones obtained for Lmu1-formulae.

The algorithms presented here are designed for easy and scalable distribution among several processors. Our experiments show that they work well in practice, yielding previously unknown results for the largest state spaces of the Very Large Transition System (VLTS) benchmark suite.

Es laden ein: Die Dozenten der Informatik