Partial order reduction versus Net unfoldings*

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In the concurrency community the tool SPIN [4] is well-known and accepted as an industrial relevant framework for verification. It is based on a rich theoretical background that uses partial order reduction techniques [3] to palliate the state explosion problem.

Besides this approach, in the field of Petri net based verification another partial order method has been developed – net unfoldings. Originally introduced by McMillan [5] and refined by Esparza, Römer, and Vogler [2] unfoldings enable different verification techniques [1, 8, 6].

In this paper we try to compare the LTL model checker of SPIN with the LTL model checker based on unfoldings [8]. We take examples from different suites (e.g. protocols, hardware circuits and parallel programs) and analyze them with both model checkers. The contribution of the paper is to give an insight in the strength and weakness of both approaches from the experimental point of view.

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