

**Oberseminar Theoretische Informatik**  
Wintersemester 2007/2008

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**Tractability of model-checking for LTL**

Mo, 05.11.2007 um 14 Uhr (c.t.) im SR 3319 (Ernst-Abbe-Platz 2, 3. Stock).

In a seminal paper from 1985, Sistla and Clarke showed that the model-checking problem for Linear Temporal Logic (LTL) is either NP-complete or PSPACE-complete, depending on the set of temporal operators used. If, in contrast, the set of propositional operators is restricted, the complexity may decrease. This paper systematically studies the model-checking problem for LTL formulae over restricted sets of propositional and temporal operators. For almost all combinations of temporal and propositional operators, we determine whether the model-checking problem is tractable (in P) or intractable (NP-hard). We then focus on the tractable cases, showing that they all are NL-complete or even logspace solvable. This leads to a surprising gap in complexity between tractable and intractable cases. It is worth noting that our analysis covers an infinite set of problems, since there are infinitely many sets of propositional operators.

Internetseite der Veranstaltung:

<http://theinfl.informatik.uni-jena.de/teaching/ws0708/oberseminar-ws0708>