

# STP2

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STP [Gan07] is an efficient open source solver for `QF.BV` and arrays without extensionality. STP recursively simplifies bit-vector constraints, solves linear bit-vector equations, and then eagerly encodes them to CNF for solving. Array axioms are added as needed, during an abstraction-refinement phase.

The version of STP submitted to STMCOMP 2012 is revision 1666 from STP's publicly available source code repository<sup>1</sup>. We provide a script that uses the Glucose 2.0 solver instead of Minisat 2.2 which STP uses by default.

## Contributions to STP

STP 1 was developed by Vijay Ganesh under the supervision of Professor David Dill. STP 2 was developed by Trevor Hansen under the supervision of Peter Schachte and Harald Søndergaard. STP handles arbitrary precision integers using Steffen Beyers library. STP encodes into CNF via the and-inverter graph package ABC of Alan Mishchenko [BM10]. We found many defects using Robert Brummayer and Armin Bieres fuzzing and delta debugging tools [BB09].

Thanks for recent bug reports and patches to: Xu Zhongxing (help with the C-API), Edward Schwartz (nice test cases), Spencer Whitman (build script), Tom Bergan (help with the C-API), Stephan Falke (build script), Khoo Yit Phang (important defects), Jianjun Huang (Bug report), and Jingyue Wu (infinite loop).

## References

- [BB09] Robert Brummayer and Armin Biere. Fuzzing and delta-debugging smt solvers. In *Proceedings of the 7th International Workshop on Satisfiability Modulo Theories*, SMT '09, pages 1–5, New York, NY, USA, 2009. ACM.
- [BM10] Robert K. Brayton and Alan Mishchenko. ABC: An academic industrial-strength verification tool. In *CAV*, pages 24–40, 2010.
- [Gan07] Vijay Ganesh. *Decision Procedures for Bit-Vectors, Arrays and Integers*. PhD thesis, Computer Science Department, Stanford University, 2007.

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<sup>1</sup>To obtain the C++ source code follow the link from STP's website: <http://sites.google.com/site/stpfastprover/>