The ProoVer Competition

A Proof Checker Competition

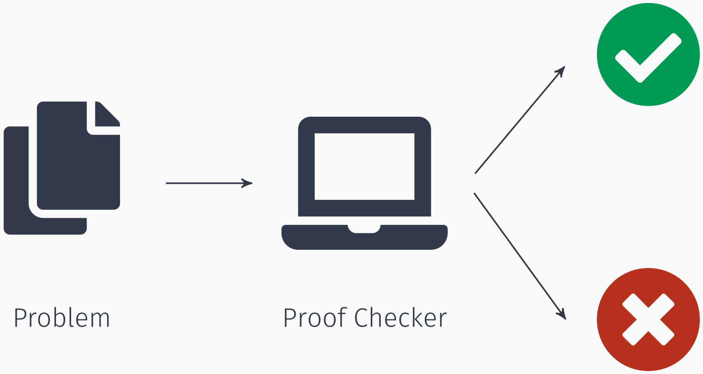
Julie Cailler & Simon Guilloud

August 2, 2025

The 14th TPTP Tea Party

Proof Verifier

Proof Verifier

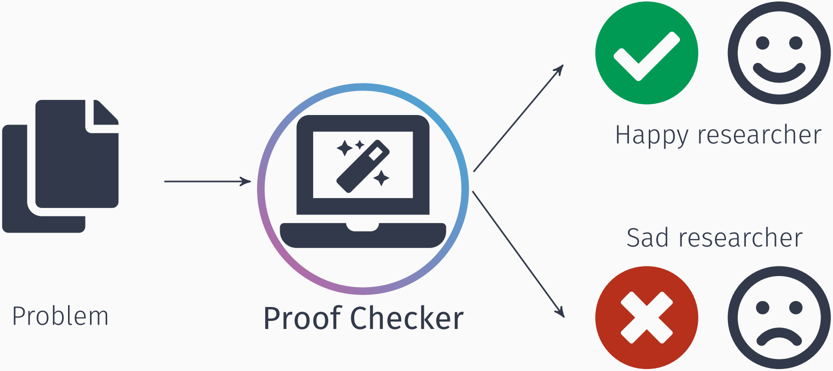


Problem

Proof Checker

ProoVer

Proof Verifier



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Proof Checker

Happy researcher

Sad researcher

F.A.Q.

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- Why?
    - Trust ATP proofs
    - Smaller CASC next year → no more budget for Vampire's trophies
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- When?
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  - ~~Yes, it's subsidized by Geoff's gambling profits!~~ Actually, nope.

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- Who can participate?
    - Anyone with a proof checker!
- What do I win?
    - ...Fun? :)

Proofs Structure & Language

- 1 problem file and its corresponding solution file
- Proofs in TSTP format
- `FOF` problems with axioms and a conjecture
- Sequence of inference steps
- Roles: `axiom`, `conjecture`, `negated_conjecture`, or `plain`
- Status: `thm`, `esa`, or `cth`
- “reasonable” granularity
- Unspecified inference rules can be checked external tool (`thm` only)
- Specified inference rules must be checked by the proof checker (Skolemization, negated conjecture, ...)
- No restrictions on the order of the proof steps

problem.p and solution.p

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External prover

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Evilization!

- Remove some hypothesis and/or axioms
- Wrong references
- Skolemization not done correctly
- Non-logical consequences
- ...

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Competition Set-Up

- 100 proofs (50 good/50 bad)
- xxx seconds timeout (?)
- Expected result: `checked` or `proof incorrect` (+ where the error occurs)
- Grading scheme (proposal):
    - Saying a Bad proof is Bad = +2
    - Saying a Good proof is Good = +1
    - Saying Nothing = 0
    - Saying a Good proof is Bad = -1 (todo: increase)
    - Saying a Bad proof is Good = -2 (or disqualify, todo: increase)

Preliminary Schedule

- Now: Interested?
- October: Website, rules and benchmarks available
- End of June 2026: System registration
- End of July 2026: ProoVer Competition at IJCAR

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- List of exhaustive rules?
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