

AProVE

14th International Workshop on Confluence

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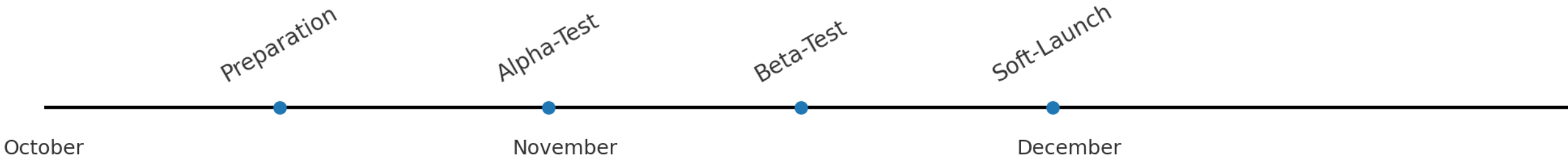
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AProVE25: Confluence Analysis in a Termination Tool

- **AProVE (Automated Program Verification Environment):**
 - Automated Termination, Complexity, and Safety Prover for Java, C, **Term Rewriting**, Integer Programs, etc.
 - **Confluence Analysis:**
 - Orthogonality Check
 - Strong Confluence Check
 - Modularity Results:
 - Disjoint Union
 - Constructor Sharing
 - Compositable
 - Newman Lemma Check (WCR + **Termination**)
 - Disproving Confluence by Searching for Counterexamples
- **Open Source Release: End of This Year**

Open Source Release

Open Source Release Timeline (End of 2025)



Target License: **LGPL (Lesser General Public License)**

- You can **use, modify, and redistribute** LGPL software (for free or commercially).
- If you **modify the LGPL-covered code itself**, you must release those modifications under the LGPL.
- If you **just use the library** (e.g., link to it in your own code), your own program does *not* have to be LGPL/GPL.

- **Future Ideas:**

- Probabilistic Rewriting and Confluence

- Newman Lemma for Probabilistic Rewriting? (Hard Open Problem, [\[Faggian 2022\]](#))

- Probabilistic Rewriting and Reachability / Infeasibility (Current Research)

- **Given:** Terms s , t and probability p .
 - **Question:** Does there exist a substitution σ such that $s\sigma \rightarrow t\sigma$ with at least / at most probability p ?