15th International Workshop on Confluence

Jan-Christoph Kassing, Alwin Schüßler, Tobias Sokolowski, and Jürgen Giesl

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AProVE26: Confluence Analysis in a Termination Tool

UnRAVeL Research Training Group – Uncertainty and Randomness in Algorithms, Verification, and Logic

RWTH AACHEN UNIVERSITY

AProVE

- **AProVE (Automated Program Verification Environment)**:
  - Automated Termination, Complexity, and Safety Prover for Java, C, **Term Rewriting**, Integer Programs, etc.

  - **Proving Confluence**:
    - Orthogonality Check [Ohlebusch 2002]
    - Strong Confluence Check
    - Decreasing Diagrams [van Oostrom 1994]
      - Using Polynomial Interpretations [Aoto 2010]
    - Redundant Rewrite Rules [Nagele, Felgenhauer, Middeldorp 2015]
    - Modularity Results [Ohlebusch 2002]
      - Disjoint Union
      - Constructor Sharing
      - Compositable
    - Newman Lemma Check (WCR + **Termination**) [Newman 1942]

  - **Disproving Confluence**:
    - Polynomial Interpretations [Aoto 2013]

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