

# Review of: "Exploiting Structure: A Survey and Analysis of Structures and Hardness Measures for Propositional Formulas"

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Potential competing interests: No potential competing interests to declare.

The paper presents interesting research, it discusses the transformation of formulas into CNF (Conjunctive Normal Form) using the axioms of propositional logic. It mentions the Tseitin transformation as an alternative that grows linearly in length.

## Advantages:

The paper provides a thorough examination of the transformation of formulas into CNF, which is foundational to the field of propositional logic. The mention of alternative transformations, such as the Tseitin transformation, adds depth to the discussion. Also, the exploration of the relationship between variables of unit clauses and backbone variables offers valuable insights into the intricacies of SAT formulas. Additionally, the paper mentioned portfolio type solvers like SATzilla or HordeSat indicates that the paper is in touch with current tools and methodologies in the field. The paper cites a range of authoritative sources, which lends credibility to the arguments presented.

## I see the following limitations:

From the summary, it seems the paper might benefit from more background information or context about why certain transformations or methodologies are preferred over others. While the paper mentions various methods and tools, a more direct comparison between them, highlighting their strengths and weaknesses in various scenarios, could be beneficial.

The paper touches upon specialized solving algorithms and measures, but a deeper dive into real-world applications or case studies might make the content more relatable and impactful.

## I have the following Suggestions for Improving the paper.

**Expand on Background:** Offer more historical or foundational context to help readers understand the evolution of the discussed methodologies.

**Incorporate Comparative Tables or Charts:** Visual aids comparing the various methods, tools, and transformations can make the content more digestible and highlight key differences more effectively.

**Discuss Current Research:** Compare the findings and methodologies of this paper with another contemporary research

in the field. This can position the paper within the broader academic discourse and highlight its unique contributions.

**Include Practical Implications:** Discuss the practical implications of the findings. How can they be applied in real-world scenarios? Are there industries or sectors that stand to benefit particularly from these insights?