

Compositional Verification of Compiler Optimizations on Relaxed Memory

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Introduction

Program Transformations as Observational Refinements

Compositional Reasoning of Transformations

Compositional Verification: Idea

Denotation of Code Blocks: Block Executions

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└ Denotation of Code Blocks: Block Executions

We have a code block within which we do some transformation. Now, what external stuff can affect its validity? The authors defined this as a context, and we record every relevant information (which we call denotation) of a context that can affect the transformation we do on the code block. Note that, the relations we count wrt context does not involve those between context and code block events (like `rf`, `hb`). We need to keep a note of this, as we do not yet have an intuition as to why they aren't considered.

Denotation of Code Blocks: Histories

Denotation of Code Blocks: Adequacy and Full Abstraction

Road to Finite Contexts: Reason and Plan

Road to Finite Contexts: Cut Predicate for Contexts

Road to Finite Contexts: Deny Edges and Extended Histories

Road to Finite Contexts: Adequate but lack of Full Abstraction