Micro-architecture simulation for verified security and performance

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Current research: modelling micro-architecture for security and performance

- **Motivation**

Spectre-type transient execution vulnerabilities occur at micro-architecture level and detailed reasoning is needed to understand the vulnerabilities and mitigations.

- **Solution**

Formal modelling of micro-architecture using a statistical approach to understand performance and security properties.

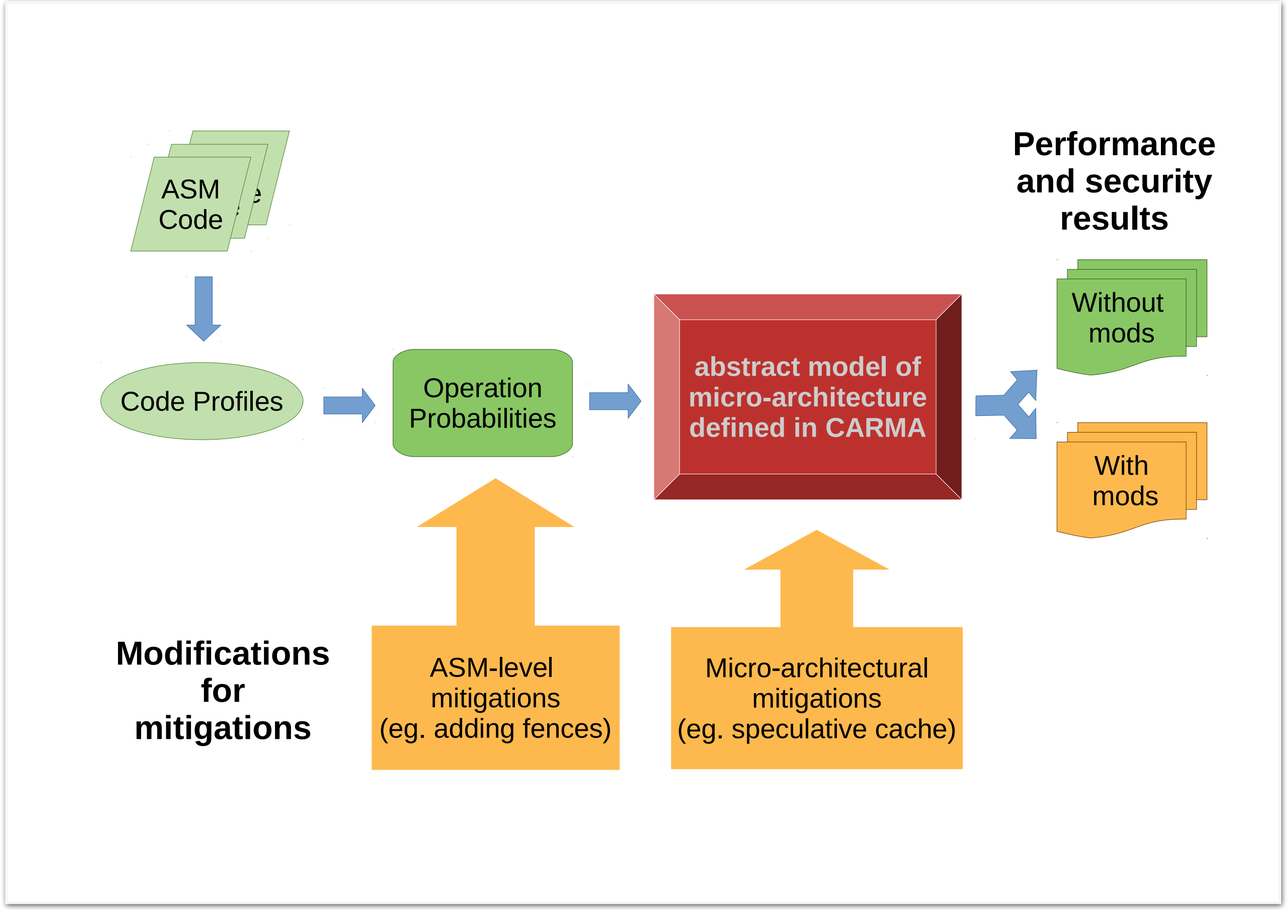
Verifying performance impacts of micro-architecture vulnerability mitigations

- **Approach**

Stochastic modelling with CARMA allows for component-based approach using code profiling.

- **Output**

Estimates of performance and likelihood of security properties.



Future research: micro-architecture simulation for verified security and performance

- **Objectives**

Generalise the approach to develop efficient and lightweight simulation of micro-architectural behaviour based on composition of micro-architectural elements that will allow the trade-off of security and performance.

- **Collaboration**

EPSRC Digital Security by Design call: closing date 7 January 2020