Formal Verification for Mechanism Design

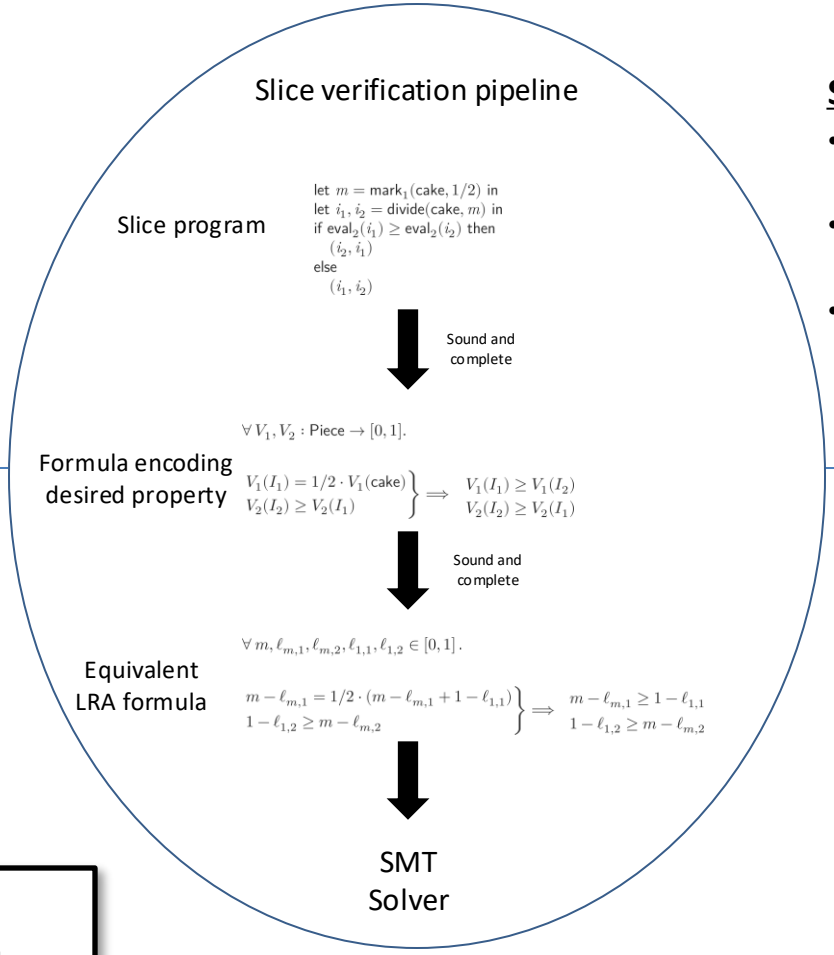
Challenge:

- Must reason about both program and participant behavior
- Seeking to verify economic properties, not just program properties
- Mechanisms are difficult to describe

Solution:

Slice: a language for cake-cutting

Cake-cutting: Divide an infinitely divisible good between a set of agents in a *fair* way



Scientific Impact:

- Formalization of mechanisms as programs
- Verification methods for new kinds of properties
- Formal assurance of mechanism correctness

Broader Impact and Broader Participation:

- Increased trust in economic mechanisms
  - Fair division
  - Good exchange
  - Agent matching
- Funded two undergraduate research projects
  - Hopefully more to come!

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