

Design of Parallel and High-Performance Computing

Fall 2013

Lecture: Amdahl's Law

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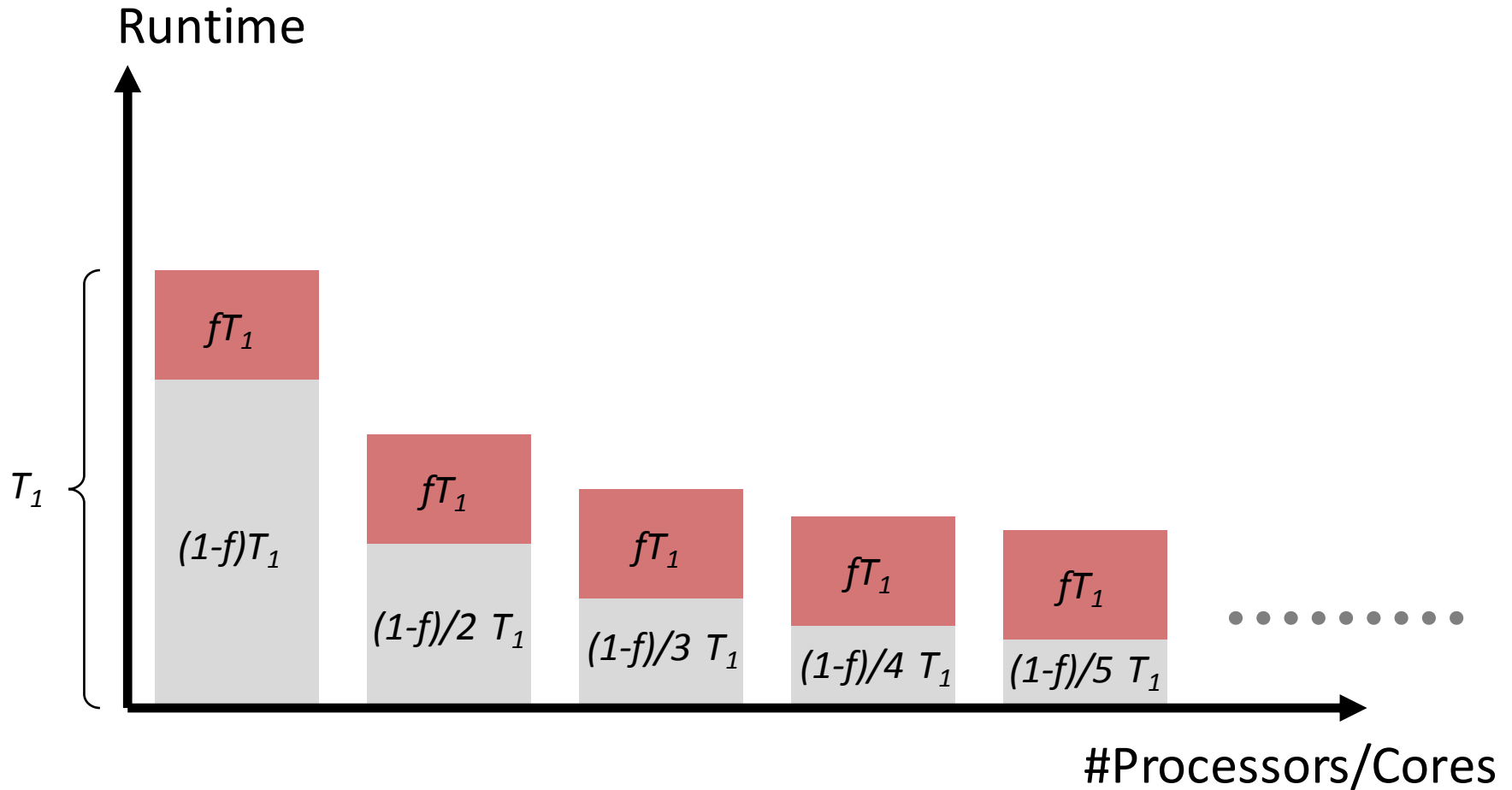


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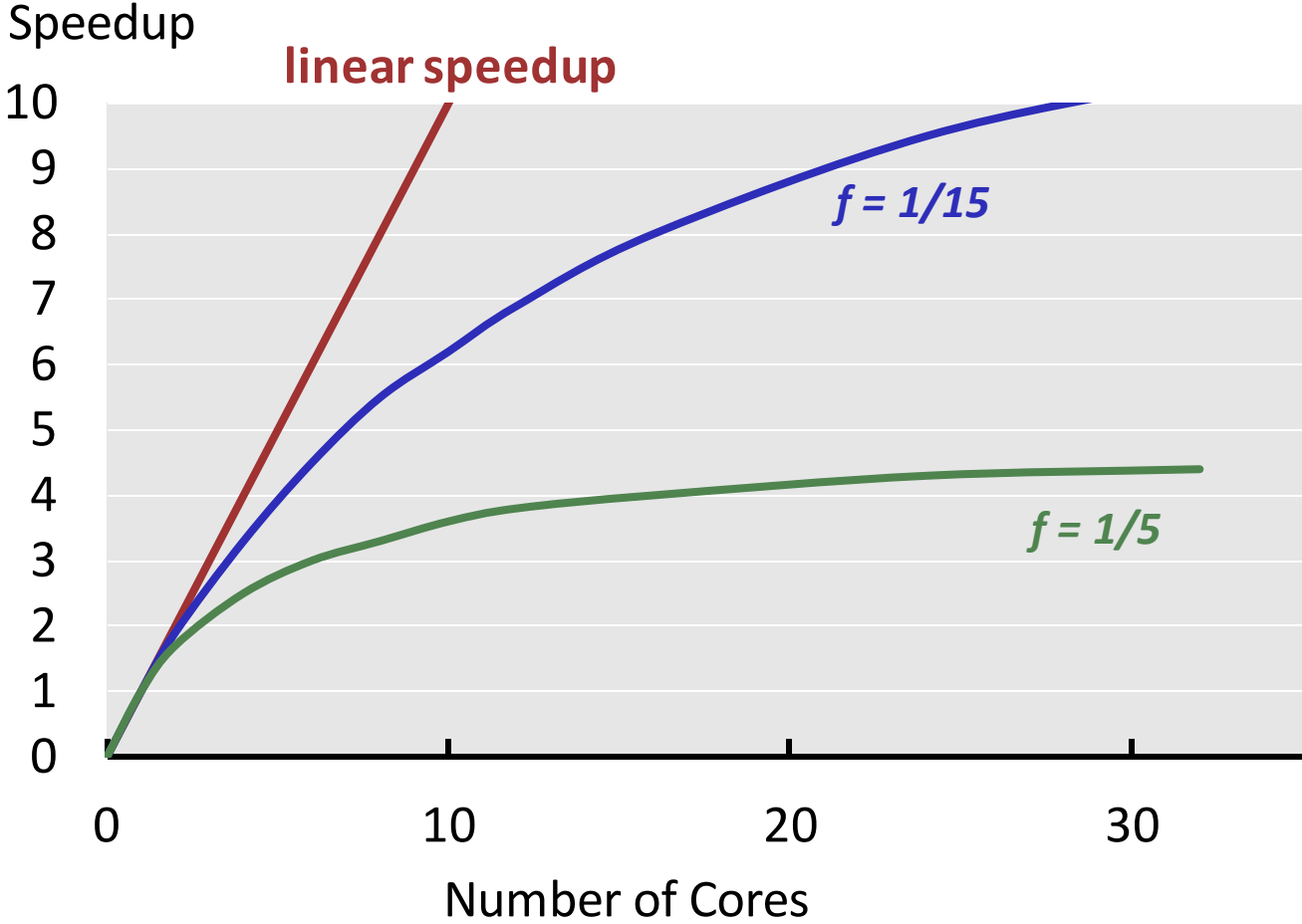
Overview

- **Plots related to Amdahl's Law and variants**
- **See associated notes on course website**

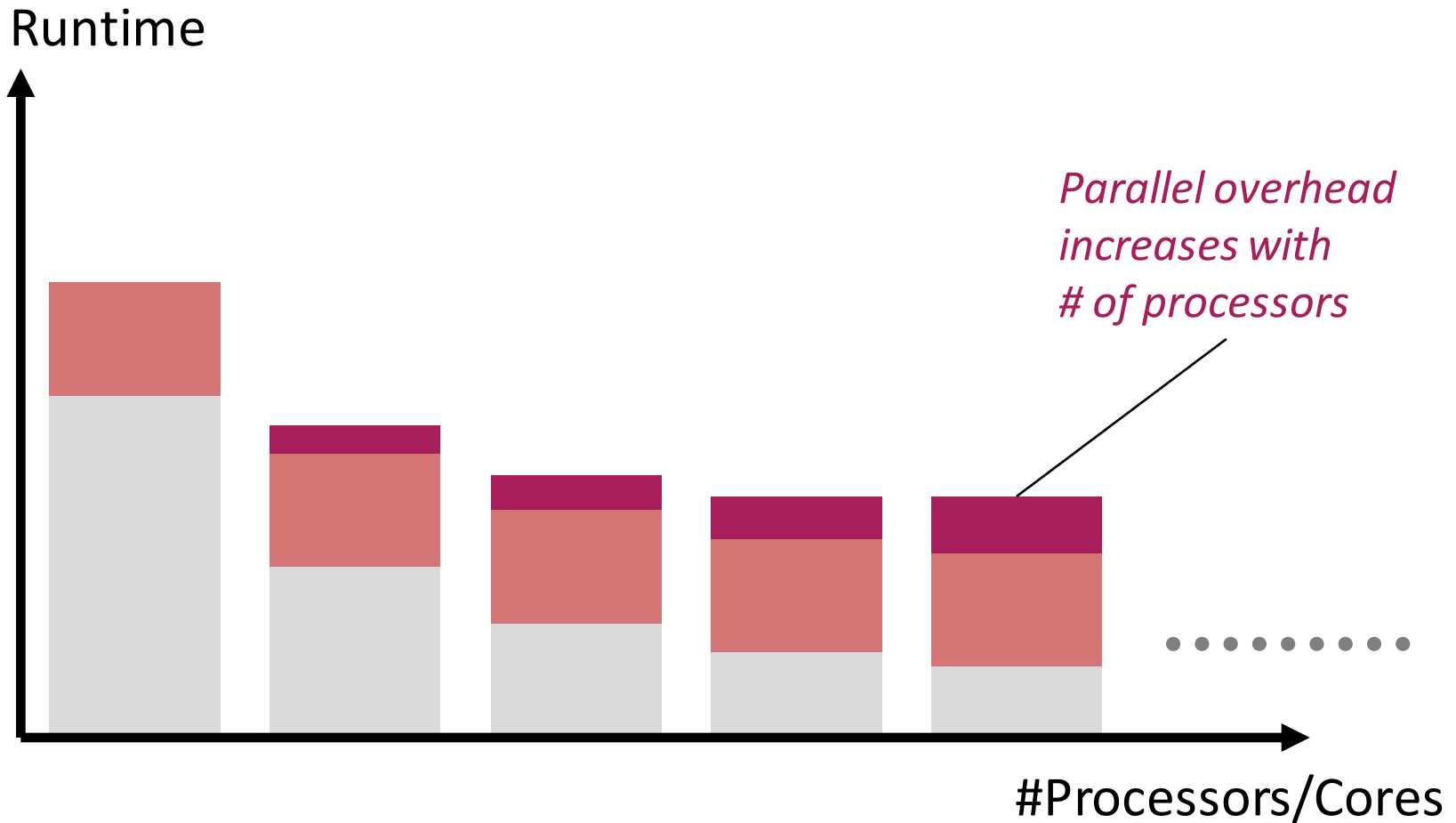
Amdahl's Law: Runtime



Amdahl's Law: Speedup

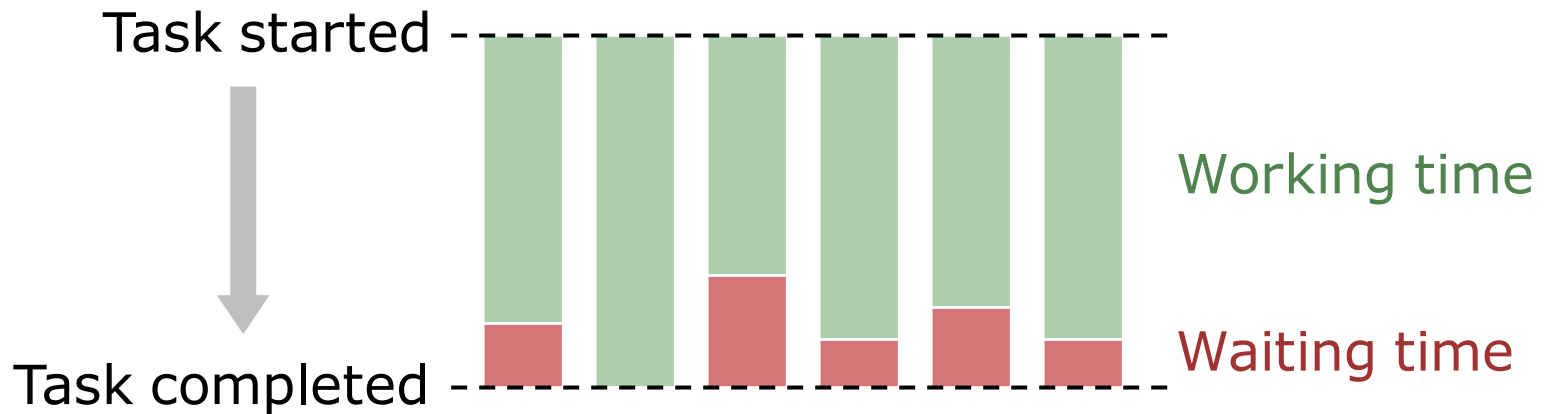


Runtime With Parallel Overhead

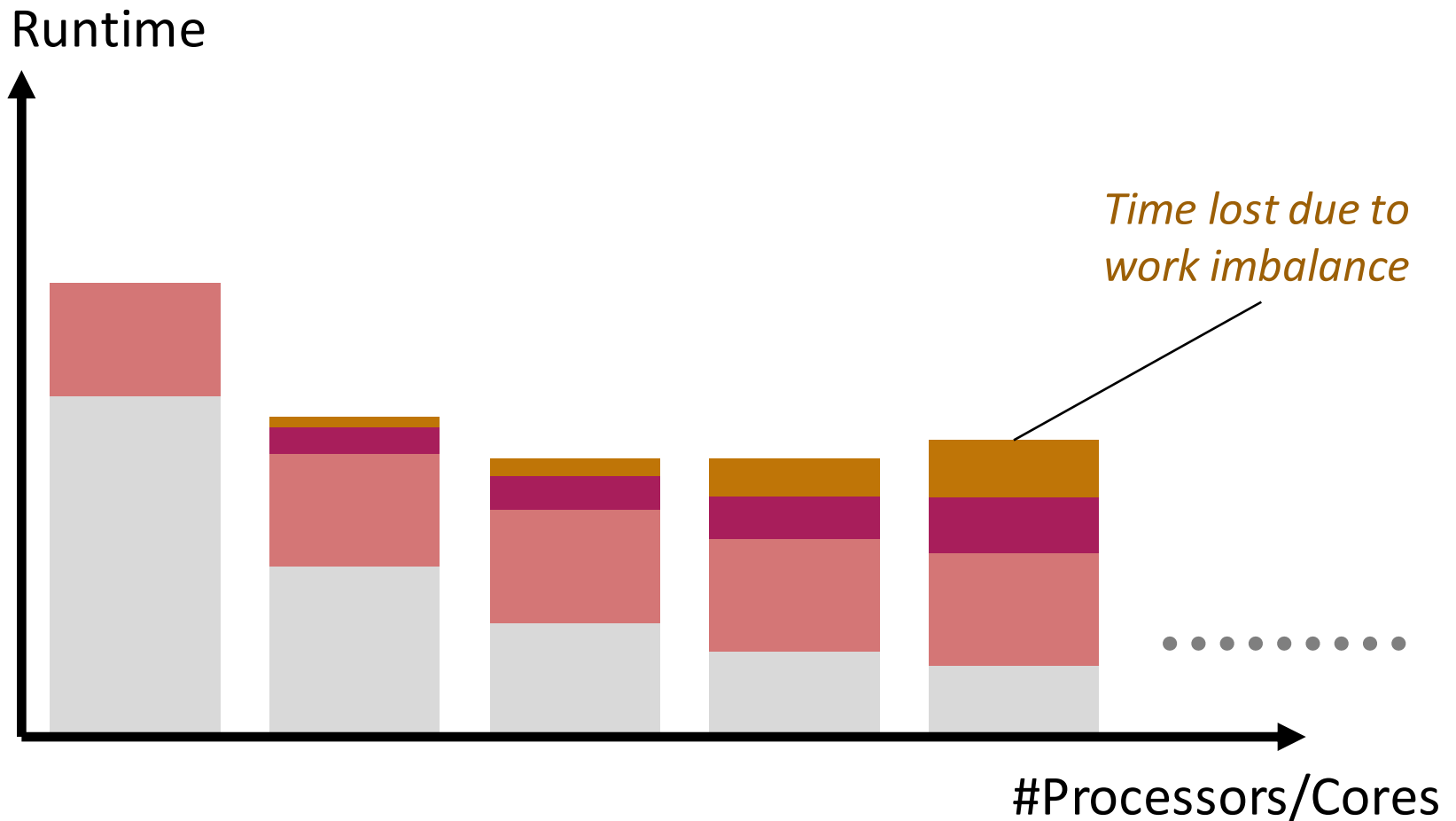


Other Issue: Load Balancing

- Amdahl's Law assumes that the computation divides evenly among the processors
- Processor waiting time is another form of overhead



Runtime With Parallel Overhead And Work Imbalance



Real Speedup Graphs Look Often Like This

