

# Design of Parallel and High-Performance Computing

Fall 2016

*Lecture:* Amdahl's Law

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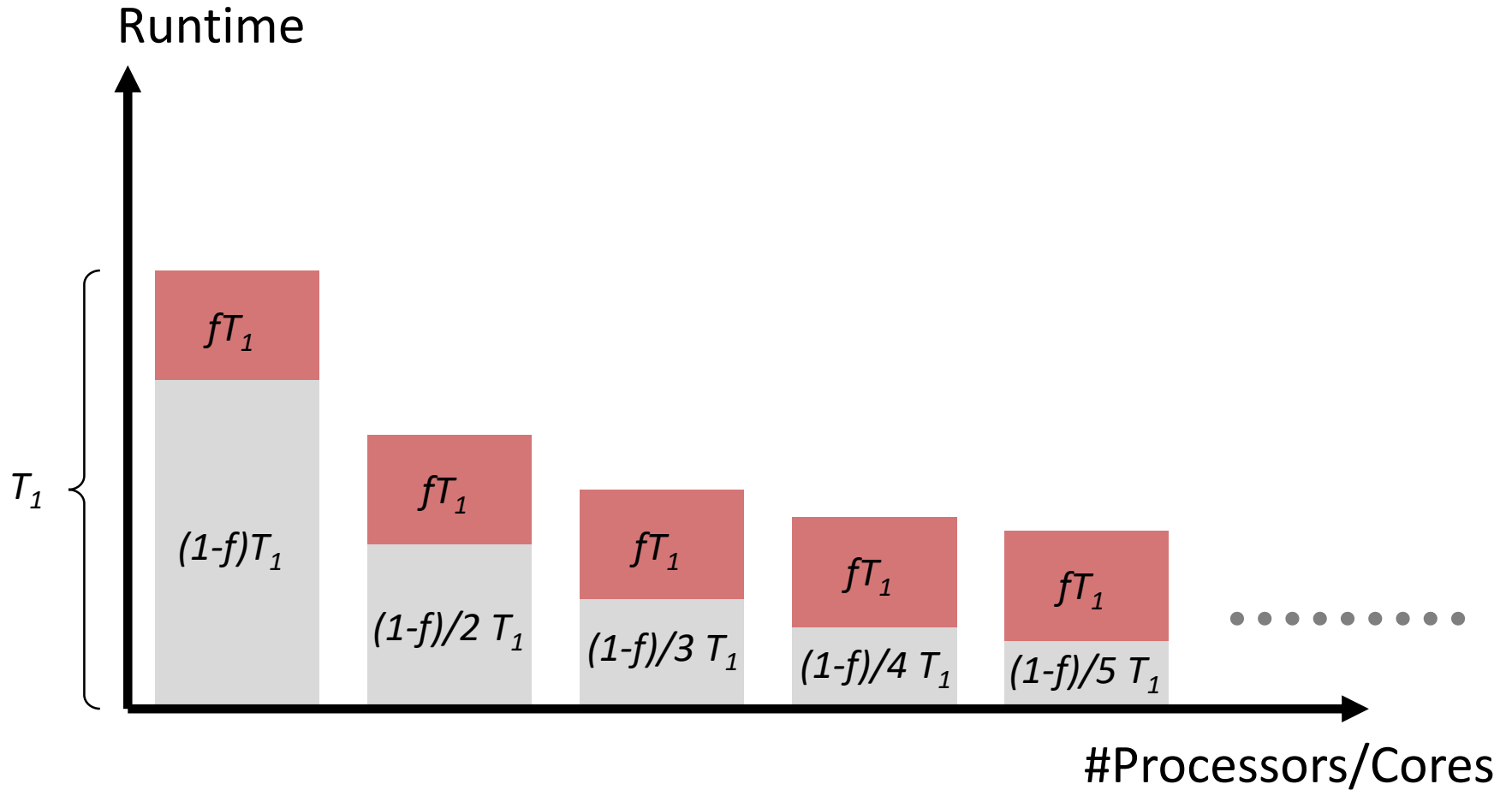


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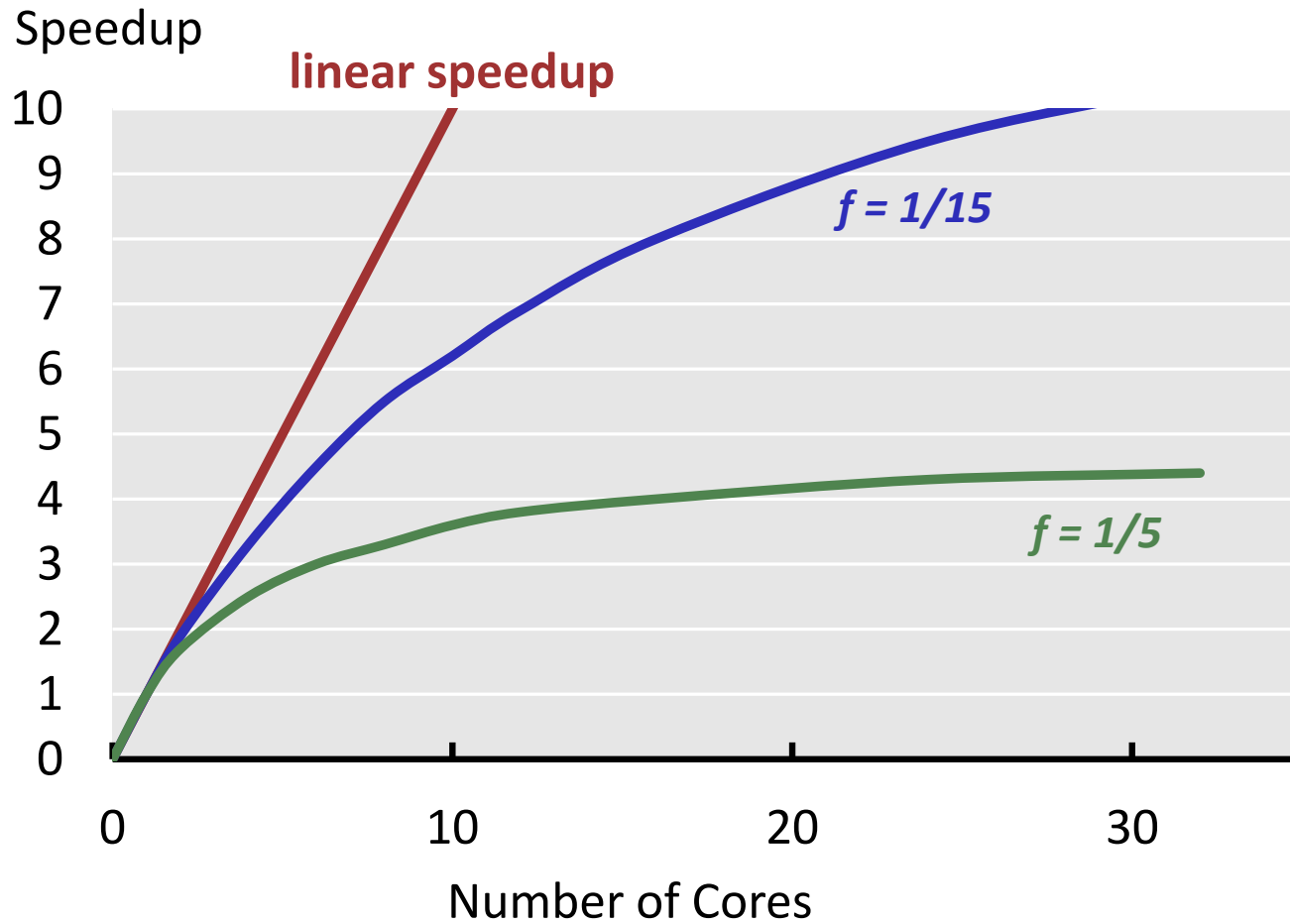
# Overview

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

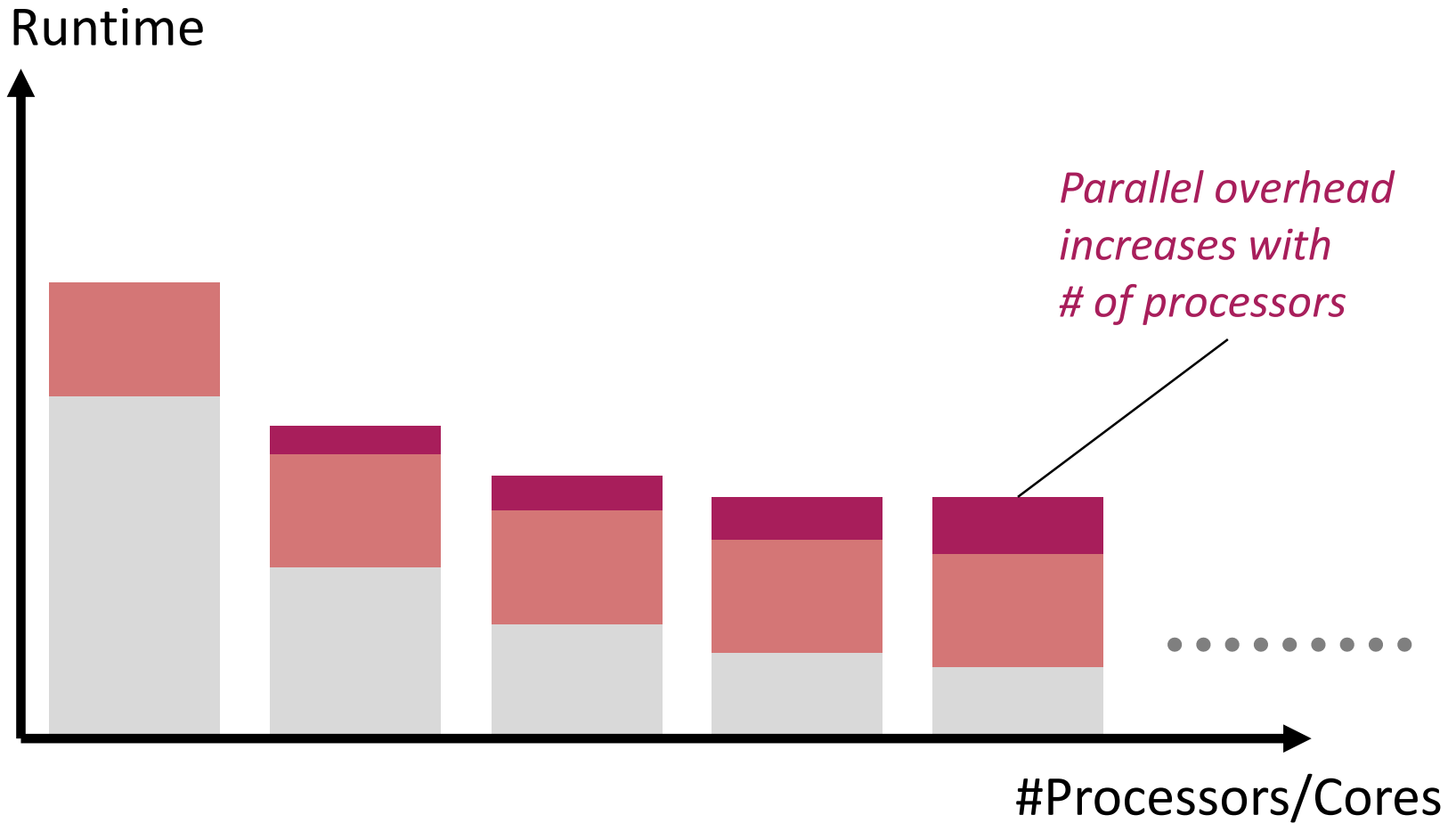
# Amdahl's Law: Runtime



# Amdahl's Law: Speedup

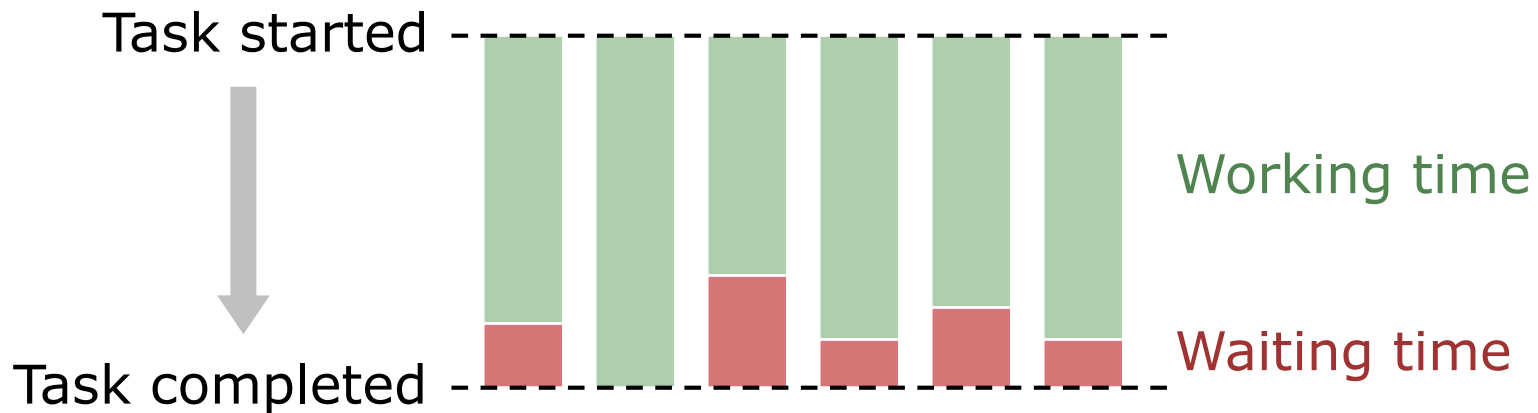


# Runtime With Parallel Overhead

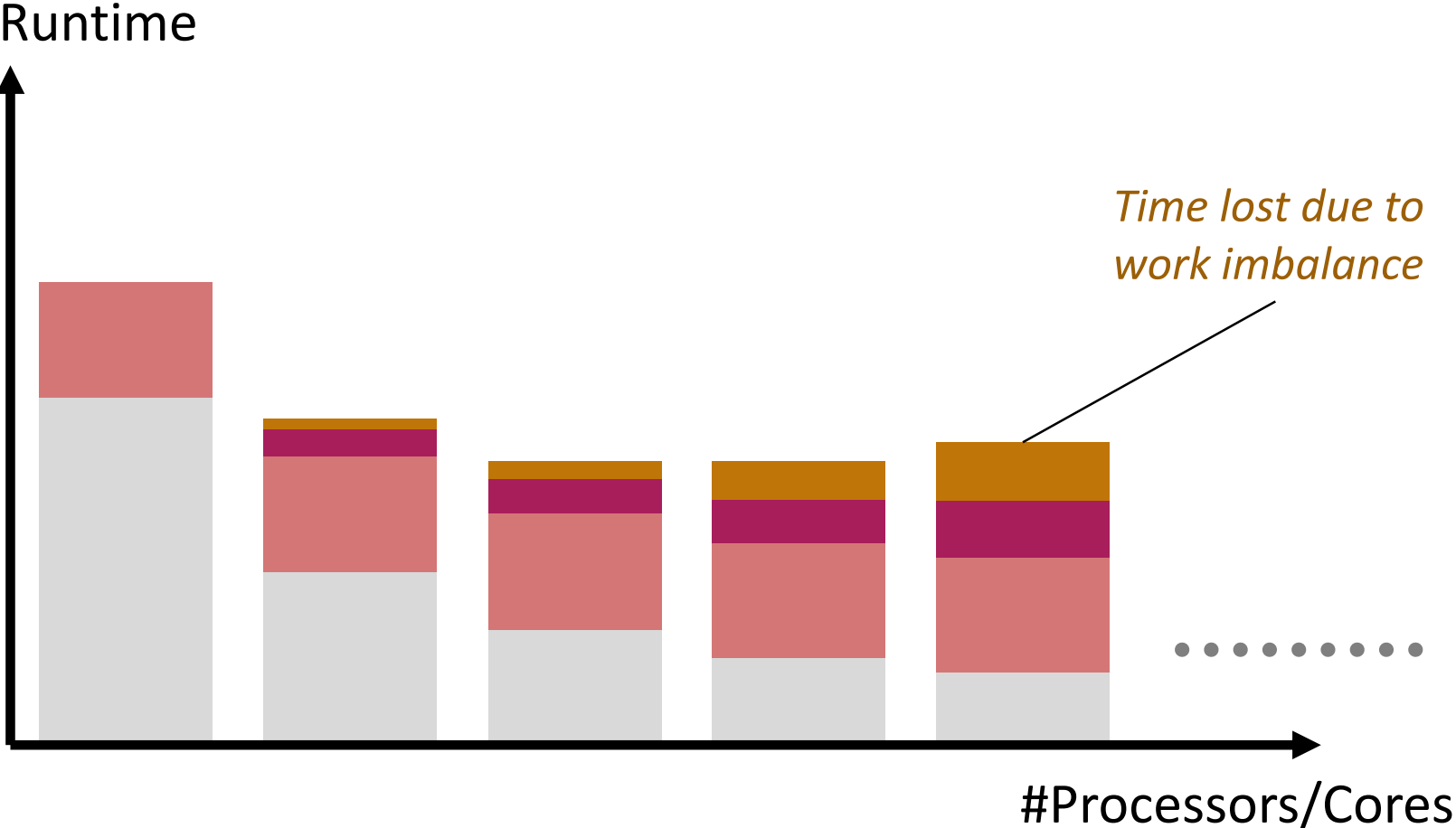


# Other Issue: Load Balancing

- 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

