How to Write Fast Numerical Code

Spring 2012
Lecture 8

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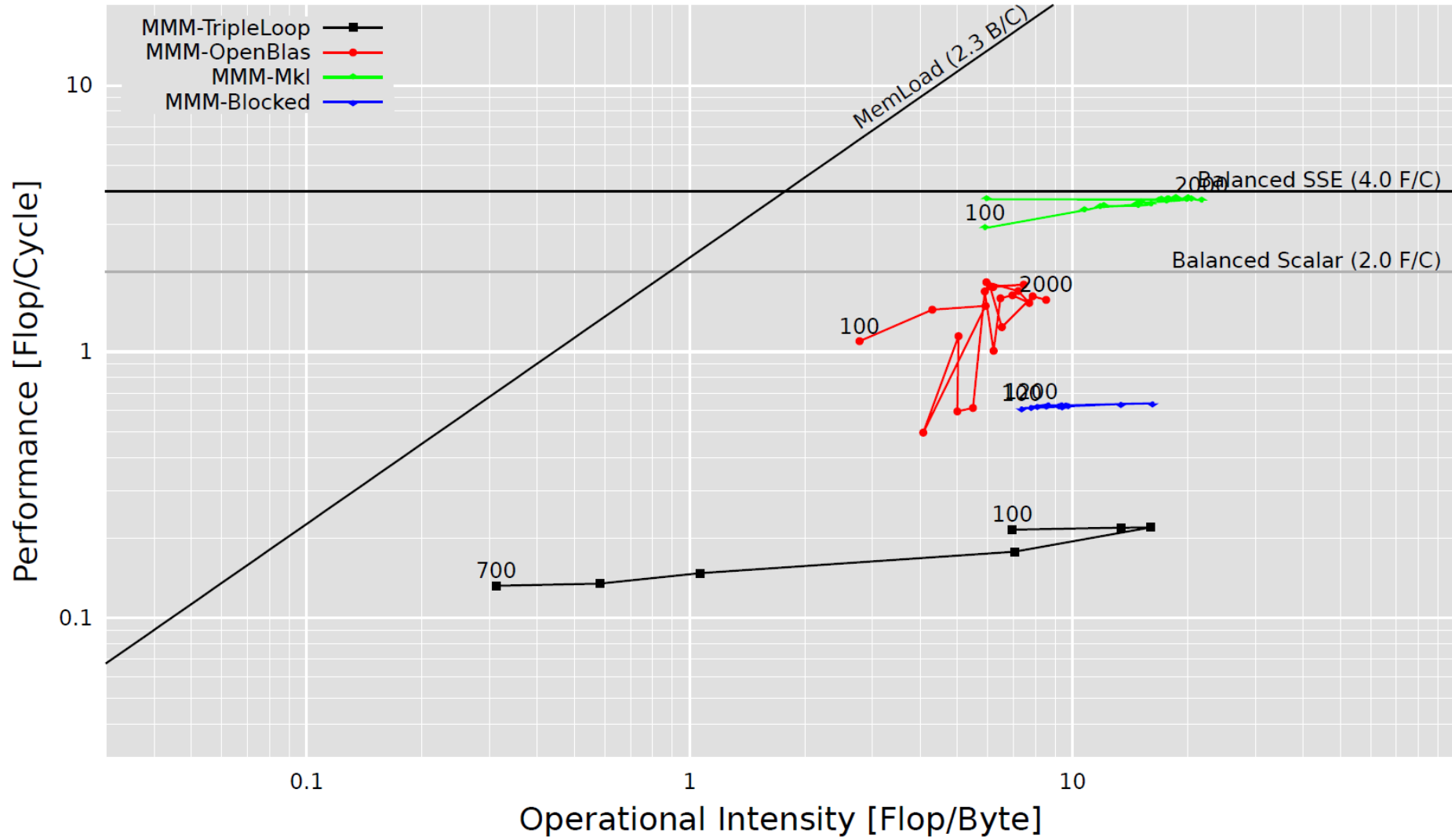**TAs:** Georg Ofenbeck & Daniele Spampinato

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Roofline Model as Tool

- **An example of performance analytics**

- **Work by our group:**
  - Ruedi Steinmann (Master thesis)
  - Georg Ofenbeck

- **The following plots are preliminary results**

Matrix-Matrix-Multiplication

Overview

Performance [Flop/Cycle] vs **Operational Intensity [Flop/Byte]**

Legend:
- VVM-Mkl ■
- MVM-Mkl ●
- MMM-Mkl ●
- FFT-MKL ◆

MemLoad (2.3 B/C)

Balanced SSE (4.0 F/C)

Balanced Scalar (2.0 F/C)

2000
100

8388608

10000
500

20000

500

32