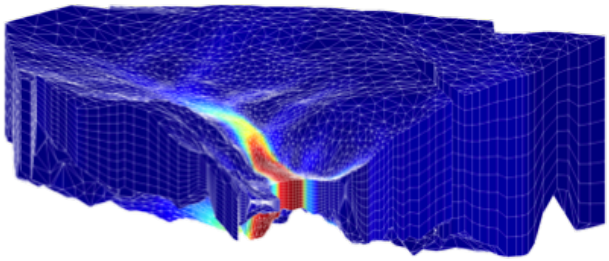
# Roofline Model Analysis of Cores of the ISSM

**Applicable for students as HiWi**
**Keywords:** *ISSM, Performance Analyse, C++, score-p, PAPI, Intel Advisor*

## Introduction

The Ice Sheet System Model (ISSM [1]) is a C++ finite element code to simulate polar ice sheets and glaciers. Therefore exist multiple compute cores, each computing one physics effect. The current implementation is parallelized using PETSc an MPI-based math framework.



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## Tasks

Since the current implementation spend much compute time in two main cores, we need a roofline model of these cores for future improvements.

- measure the nodelevel performance of the cores
- create the roofline model
- report bottlenecks

## Qualifications

**Skills**

- general knowledge of performance measurement
- general knowledge of hardware performance counters

**Interested in**

- high performance computing
- performance modelling

## References

[1] https://issm.jpl.nasa.gov/