

# **Introduction to High Performance Computing**

**Monday 15 August 2016 - Friday 26 August 2016**

**KTH Lecture Hall E3**

## **Course Topics**

## **Parallel Programming**

The emphasis is on teaching skills in using MPI, the message passing interface, and OpenMP, shared-memory parallel programming. A disciplined approach to methods of measuring program performance is also highlighted. The school also features GPU programming and discussions of future programming models.

## **Modern Computer Architectures**

A survey of the aspects of processors, memory hierarchies, switch and networking technologies relevant for programming of HPC applications.

## **Parallel Algorithms**

Basic ideas in parallel algorithms will be covered in the framework of numerical linear algebra. The potential for parallelization and parallelization techniques in different fields of applications will be discussed.

## **Efficient Programming**

Code optimizations for distributed- and shared-memory machines.

## **Case Studies**

Real-world examples from a variety of areas.