# OpenACC Programming for Parallel Accelerated Supercomputers

## First Day

Attendees will learn about the Cray XK architecture and its programming environment. They will have an initial understanding on how OpenACC can be employed to port applications to GPUs. Amongst others, performance tools from Cray will be used to understand the interplay between host and device. The attendees can learn by means of predefined practical sessions.

09:00 – 09:30 Registration
09:30 – 09:40 Welcome                                         HLRS
09:40 – 10:10 **L1**: Introduction to the Cray XK7            Stefan Andersson and
                                                              Aniello Esposito (Cray)
10:10 – 10:30 **L2**: Using the Cray XK7 Programming Environment ditto.
10:30 – 10:45 Break
10:45 – 11:00 **P0**: Logging on, running a very simple job    ditto.
11:00 – 11:45 **L3**: Basic OpenACC                           ditto.
11:45 – 12:00 Break
12:00 – 13:00 **P1**: A first OpenACC code                    ditto.
13:00 – 14:00 Lunch
14:00 – 14:45 **L4**: Porting a simple example to OpenACC     ditto.
14:45 – 15:30 **L5**: Tools for debugging and profiling       ditto.
15:30 – 16:00 Break
16:00 – 16:30 Reveal Demo
16:30 – 18:00 **P2**: Porting the simple example yourself     ditto.

## Second Day

More advanced OpenACC topics will be addressed by means of concrete cases. The attendees can practice with larger codes and in the afternoon they can apply the acquired knowledge to their own codes.

09:00 – 09:40 **L6**: Advanced OpenACC                        ditto.
09:40 – 10:15 **L7**: Case study: The parallel himeno benchmark ditto.
10:15 – 10:30 Break
10:30 – 11:30 **P3**: Port a larger code with the help of tools ditto.
11:30 – 12:00 **L8**: Porting a parallel code to OpenACC      ditto.
12:00 – 12:15 Break
12:15 – 13:00 **L9**: OpenACC interoperability and roadmap    ditto.
13:00 – 14:00 Lunch
14:00 – 15:15 Cray Programming Environment (PE) for Accelerators,
               current status and future directions,         Luiz deRose (Cray,
               Including OpenACC 2.0                          PE Director)
15:15 – 15:30 Break
15:30 – 17:00 **P3**: continued and working on own codes      Stefan Andersson and
                                                              Aniello Esposito (Cray)

**L…** = Lecture,  **P…** = Practical