**High Performance Computing**

[**http://ioda.sems.qmul.ac.uk/events/upb2018**](http://ioda.sems.qmul.ac.uk/events/upb2018)

**Hosted by Prof. Andrea Walther, at the Universitaet Paderborn**

[**http://www.uni-paderborn.de**](http://www.uni-paderborn.de)

**Monday 5th Wednesday 7th February 2018**  
Presentations by Dr. Rolf Rabenseifner HLRS, <http://www.hlrs.de/home/>

and Kshitij Kulshreshtha, Institute for Mathematics, UPB

**Message Passing Interface**

**Monday 5th February**

* Parallel Architectures and Programming Models
* MPI Introduction to the Message Passing Interface, Overview & Process model
* Messages and Point-to-Point Communication
* Non-Blocking Communication
* Collective Communication
* Error handling
* Probe, Cancel, Persistent Requests
* The new Fortran module

**Tuesday 6th February**

* Groups & Communicators, Environment Management
* Virtual Topologies
* Derived Datatypes
* OpenMP – Overview and execution model, work sharing and Data Environment
* OpenMP – Summary and Pitfalls, Heat example and Extensions
* Verifying an OpenMP Parallelization with the Intel Inspector XE

**Wednesday 7th February**

* Parallelization of Explicit and Implicit Solvers
* One-sided Communication and Shared memory
* Parallel file, MPI and Threads
* Process Creation and Management
* Algorithmic Differentiation with parallelism using Open MP & MPI





**The IODA Consortium Meeting will take place on Thursday 8th February**