

Hackathon preparation information and instructions

Goal

This workshop follows the first EoCoE workshop at Erlangen in October 2019. This new workshop will have the form of a hackathon. It means that we will really focus on your code and not just general aspects. First, you will be able to get information from performance tools seen during the first workshop helped by experts (from FAU, BSC and JSC). Then, the goal is to work actively on solving performance problems to optimize your algorithms. It concerns both CPU and GPU aspects. The goal of this workshop is not to port an entire algorithm to a specific architecture but to work on specific performance issue you may have in your current implementation.

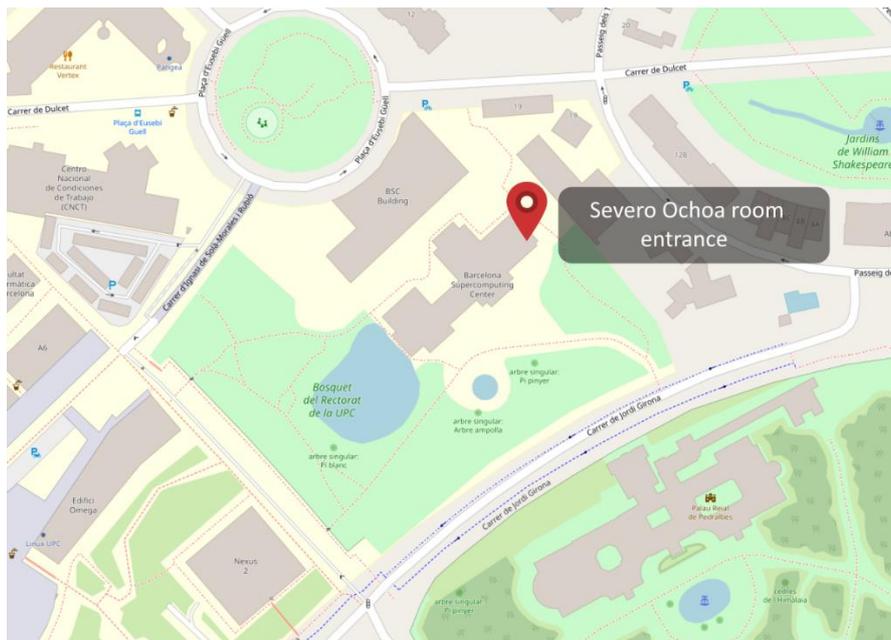
Agenda

Tuesday March 31st	Wednesday April 1st	Thursday April 2nd	Friday April 3rd
Introduction and Lectures	Work on the codes	Work on the codes	Friday morning : work on the codes Friday afternoon optional (Georg Hager and Brian Wylie will stay)*

* You can use Friday afternoon to have specific discussions with one of the expert. It is better you let us know in advance you want to stay.

Location

Severo Ochoa room at [Barcelona Computing Center](http://www.bsc.es) (www.bsc.es)



How we work together

- ✓ **Available supercomputers:** During the workshop, we will have access to BSC, FAU and JSC super-computers. For simplicity and convenience, we would prefer that all attendees work on the BSC supercomputers (MareNostrum-IV and the Power-CTE GPU cluster) equipped with all tools. Access to FAU supercomputers will be provided for Likwid with hardware counters. We accept that you use your own supercomputers but you should have the performance evaluation tools presented at the previous workshop installed on it:
 - Extrae
 - Likwid
 - Scalasca/Score-P
- ✓ **Bring your own device:** The room at BSC will not have desktop computers. You are kindly requested to bring your own device. Nonetheless, we will try to bring screens for small laptops.

Prepare yourself to the Hackathon

- ✓ **Preparation of your code on BSC machines:** You should already have access to the EoCoE project allocation on MareNostrum-IV at BSC. We will also provide access to the GPU-based Power-CTE nodes 2 weeks before the beginning of the event. By installing your code in advance and familiarizing with BSC environment, we will save time during the workshop.
- ✓ **Targeted architecture:** Please, tell us in advance on which kind of architecture you want to work (CPU, GPU).
- ✓ **Benchmarks:** You should prepare a few benchmarks to work on during the workshop. They should well represent a production case without being too large/long or too small/short. Not too large/long means a limited number of nodes but sufficiently large to fill the computing units as it would be in production runs and running to completion in less than one hour. Not too small/short means providing sufficient data and computation from an execution of a few minutes to see performance issues as it would happen in production runs. By staying close to production runs, you ensure that you keep specific effects such as load imbalance, data management, cache issues, scaling issues etc.
- ✓ **Preliminary results:** Any preliminary performance analysis from the tools will be appreciated
- ✓ **Known issues:** You may not have a clear view of all performance issues but if yes, please come with a list of problems to focus on during the workshop.
- ✓ **Personal challenges:** We will not have the time to address all matters. You should come with a reasonable set of issues you want to solve and focus on during the workshop.

Event Website

<https://indico.math.cnrs.fr/event/5550/>

Questions

For any question, you can contact mathieu.lobet@cea.fr