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## Performance portability with alpaka

*Thursday, 27 October 2022 11:00 (30 minutes)*

The alpaka library is a header-only C++17 abstraction library for development across hardware accelerators (CPUs, GPUs, FPGAs). Its aim is to provide performance portability across accelerators through the abstraction (not hiding!) of the underlying levels of parallelism. In this talk we will show the concepts behind alpaka, how it is mapped to the various underlying hardware models, and show the features introduced over the last year. In addition, we will also (shortly) present the software ecosystem surrounding alpaka.

### Significance

The alpaka library has been adopted by the CMS experiment at CERN to be integrated in CMSSW as a performance portability library. It is also used in other projects, for example the PConGPU project for particle-in-cell simulations.

### References

[https://doi.org/10.1007/978-3-319-67630-2\\_36](https://doi.org/10.1007/978-3-319-67630-2_36) - latest peer-reviewed paper about alpaka

<https://github.com/alpaka-group/alpaka> - Main software repository

<https://www.hzdr.de/publications/Publ-33634> - Introductory lecture given at the ESC21 school in Bertinoro, Italy

### Experiment context, if any

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