

## Heterogeneous techniques for rescaling energy deposits in the CMS Phase-2 endcap calorimeter

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We present the porting to heterogeneous architectures of the algorithm used for applying linear transformations of raw energy deposits in the CMS High Granularity Calorimeter (HGCAL). This is the first heterogeneous algorithm to be fully integrated with HGCAL's reconstruction chain. After introducing the latter and giving a brief description of the structural components of HGCAL relevant for this work, the role of the linear transformations in the calibration is reviewed. We discuss how this work facilitates the porting of other algorithms in the existing reconstruction process, as well as integrating algorithms previously ported (but not yet integrated). The many ways in which parallelization is achieved are described, and the successful validation of the heterogeneous algorithm is covered. Detailed performance measurements are presented, showing the wall time of both CPU and GPU algorithms, and therefore establishing the corresponding speedup.

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