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Papas: A Fast Simulation of the Particle Flow

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Particle flow combines the information from all subdetectors for an optimal reconstruction of all particles in the final state of the collision: charged hadrons, photons, neutral hadrons, electrons, and muons. This technique demonstrated superior performance in past and present experiments, both in ee and pp collisions (ALEPH, CMS), and is now envisioned for future collider experiments. The design of the future detectors is driven by physics performance results, often obtained with a fast, parametrized simulation. Papas (PARAMetrized PARTicle Simulation) is a new fast simulation program featuring a fully-fledged particle-flow algorithm, and is able to capture the influence of the detector properties on reconstruction performance. The principles of papas are presented, as well as the results obtained with two detector models, CMS and CLD (CLIC-based detector design for FCC-ee).

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