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Thesis Title	*Development of Particle Flow Jet Identification Criteria for the CMS Experiment at the LHC*
Supervisor	Niki Saoulidou, Assistant Professor
Summary	The Large Hadron Collider (LHC) is the world's most powerful and largest particle accelerator. Proton beams of 13 TeV center - of - mass energy collide giving the experiments the ability to investigate the Standard Model (SM) with high precision and at extremely high energy scales, never probed before. Due to the nature of the colliding beams and the strong coupling constant of Quantum Chromodynamics (QCD) hadronic jets play a significant role in New Physics searches and in analyses of QCD and other SM backgrounds. This is the reason why in our analyses we are focused on hadronic jets: from their reconstruction and selection to their utilization in searches for New Physics, such as th hunt for Dark Matter particles. In this Thesis we present the development of the Particle Flow Jet Identification Criteria (PF Jet ID) for the CMS (Compact Muon Solenoid) experiment. This set of criteria is used by all CMS analyses in order to reject noise, badly reconstructed jets and also reduce fake Missing Transverse Energy, while retaining the vast majority of real physics jets. It is worth-mentioning that monojet and dijets analyses hunting for Dark Matter make use of Particle Flow Jet ID Criteria.
Key words	Collider Physics, High Energy Physics, CMS Experiment, Jets
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