1.	Record Nr.	UNINA9910349503503321
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	Titolo	A Hardware Track-Trigger for CMS : at the High Luminosity LHC / / by Thomas Owen James
	Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2019
	ISBN	3-030-31934-2
	Edizione	[1st ed. 2019.]
	Descrizione fisica	1 online resource (133 pages)
	Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
	Disciplina	539.72114
	Soggetti	Particle acceleration
		Physical measurements
		Measurement
		Semiconductors
		Particle Acceleration and Detection, Beam Physics
		Measurement Science and Instrumentation
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di bibliografia	Includes bibliographical references.
	Nota di contenuto	Introduction -- The CMS Phase II Upgrade -- The Track Finder Demonstrator -- The Hough Transform -- The Kalman Filter -- Demonstrator Results -- Outlook and Summary.
	Sommario/riassunto	The work described in this PhD thesis is a study of a real implementation of a track-finder system which could provide reconstructed high transverse momentum tracks to the first-level trigger of the High Luminosity LHC upgrade of the CMS experiment. This is vital for the future success of CMS, since otherwise it will be impossible to achieve the trigger selectivity needed to contain the very high event rates. The unique and extremely challenging requirement of the system is to utilise the enormous volume of tracker data within a few microseconds to arrive at a trigger decision. The track-finder demonstrator described proved unequivocally, using existing hardware, that a real-time track-finder could be built using present-generation FPGA-based technology which would meet the latency and performance requirements of the future tracker. This means that more advanced

hardware customised for the new CMS tracker should be even more capable, and will deliver very significant gains for the future physics returns from the LHC.