

Contents

1	Introduction	1
1.1	The LHC project	1
1.2	The LHC physics programme	6
1.3	The CMS experiment	8
2	Semiconductor Detectors	21
2.1	The p-n junction	23
2.2	Signal creation	27
2.3	Radiation effects	36
3	The CMS Silicon Strip Tracker	39
3.1	Tracker concept	39
3.2	Silicon strip detector modules	44
3.3	Readout, triggering and services	53
3.4	Radiation hardness	66
3.5	Tracker substructures	67
3.6	Laser Alignment System	80
3.7	Cooling system	81
3.8	Material budget	82
3.9	Expected performance	83
4	Detector Production and Commissioning	87
4.1	Production	87
4.2	Commissioning experiences	116
5	Conclusion	129
	Bibliography	131