

# Silicon Tracker的组织事项

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# Silicon Tracker Ref-TRD的组织事项

- 客观上来讲，Silicon Tracker Ref-TDR的内容是单薄的，无论在各部分内容的全面性上还是深度上，远没到一定的技术性标准。我们对这要有清醒的认识。
- 但Silicon Tracker Ref-TDR的撰写，我们需要进行收敛！
- 从下周5开始，不管进度如何，我们整个组开始进行每周Ref-TDR的统一阅读和修改。
- 从下周或下下周开始，我开始着手对整个章节的Ref-TDR进行系统性地修改。
- 在技术上，目前关键性欠缺急需补充的内容包括：
  - Overview of ITK and OTK (李刚)
  - 端盖部分的应力分析和热分析 (李宇杰、严琪)
  - 本底的估计 (李瞻、李一鸣)
  - Performance (李刚、严琪)

请大家加快进度！

# 上周的任务安排

## Chapter 5 Silicon Trackers

5.1	Requirements	✓	
5.2	Overview of ITK and OTK		(a)
5.2.1	Tracker system layout optimization		
5.3	Inner silicon tracker (ITK)	✓	
5.3.1	CMOS chip R&D	✓	
5.3.1.1	HV-CMOS pixel R&D	✓	
5.3.1.2	CMOS strip R&D	✓	
5.3.2	ITK design	✓	
5.3.3	Readout electronics	✓	
5.3.4	Mechanical and cooling design	✓	
5.3.5	Prospects and plan		(c)
5.4	Outer silicon tracker (OTK) with TOF	✓	
5.4.1	AC-LGAD sensor and ASIC R&D	✓	
5.4.1.1	AC-LGAD Sensor R&D	✓	
5.4.1.2	AC-LGAD ASIC R&D	✓	
5.4.1.2.1	General requirements	✓	
5.4.1.2.2	ASIC architecture	✓	
5.4.1.2.3	Single-channel readout electronics	✓	
5.4.1.2.4	Data process and digital blocks	✓	
5.4.1.2.5	Radiation tolerance	✓	
5.4.1.2.6	Power distribution and grounding	✓	
5.4.1.2.7	Prototype performance	✓	
5.4.1.2.8	Monitoring	✓	
5.4.1.2.9	Roadmap towards production	✓	
5.4.2	OTK design	✓	
5.4.2.1	OTK barrel design	✓	
5.4.2.2	OTK endcap design	✓	
5.4.3	Readout electronics	✓	
5.4.3.1	Front-end board	✓	
5.4.3.2	Concentrator card and power distribution	✓	
5.4.3.3	Slow control and monitoring	✓	
5.4.3.4	Clock distribution	✓	
5.4.4	Mechanical and cooling design	✓	
5.4.5	Prospects and plan		(e)
5.5	Performance		(f)
5.5.1	The global performance of the tracking system		
5.5.2	The performance of silicon tracker (barrel)		
5.5.3	The performance of the transition zone (barrel+end-cap)		
5.5.4	The performance of forward tracking (end-cap)		

- 严琪: Requirements, ITK 和 OTK 章节的 introduction, ITK design 和 OTK design, Mechanical and cooling design (ITK), Mechanical and cooling design (OTK) (d)

- 一鸣, 周扬: HV-CMOS pixel R&D 90%  
ITK: Prospects and plan 70% (c)  
Counting rate estimation 20% (n)

- 史欣: CMOS strip R&D 70%  
ITK: Prospects and plan 60% (c)

- 赵梅: AC-LGAD sensor R&D 中 sensor 90%  
OTK: Prospects and plan 60% (e)  
OTK overall

- 严雄波: Readout electronics (ITK) 90%  
Readout electronics (OTK) 90%  
AC-LGAD ASIC R&D 90%  
OTK: Prospects and plan 30% (e)  
Electronic overall

- 李刚: Requirements 90%  
Overview of ITK and OTK 50% (a)  
Performance 10% (f)

撰写参与人员: 严琪、李刚、李一鸣、周扬、史欣、赵梅、严雄波  
严雄波是目前完成任务最好的成员

# Remaining Ongoing Tasks for the Silicon Tracker TDR (Highlighted in Blue)

## Chapter 5 Silicon Trackers

5.1	Requirements		✓
5.2	Overview of ITK and OTK	(a)	✓
5.2.1	Tracker system layout optimization		✓
5.2.2	Technology Options and Boundary Conditions		✓
5.2.3	Optimization Tools		✓
5.2.4	Layout Optimization		✓
5.2.5	Layout and Performance		✓
5.2.6	Summary		✓
5.3	Inner silicon tracker (ITK)		✓
5.3.1	CMOS chip R&D		✓
5.3.1.1	HV-CMOS pixel R&D		✓
5.3.1.1.1	Technology survey for silicon pixel detectors		✓
5.3.1.1.2	Development of HVCMOS pixel sensor for CEPC		✓
5.3.1.1.3	COFFEE1		✓
5.3.1.1.4	COFFEE2		✓
5.3.1.2	CMOS strip R&D		✓
5.3.2	ITK design		✓
5.3.2.1	ITK barrel design		✓
5.3.2.2	ITK endcap design		✓
5.3.2.3	Backup design for the ITK		✓
5.3.3	Readout electronics		✓
5.3.4	Mechanical and cooling design		✓
5.3.4.1	Barrel local support		✓
5.3.4.1.1	Materials		✓
5.3.4.1.2	Structural characterisation		✓
5.3.4.1.3	Thermal characterisation		✓
5.3.4.2	Endcap local support		✓
5.3.4.2.1	Materials		✓
5.3.4.2.2	Structural characterisation	(b)	✓
5.3.4.2.3	Thermal characterisation		✓
5.3.5	Prospects and plan	(c)	✓

5.4	Outer silicon tracker (OTK) with TOF		✓
5.4.1	AC-LGAD sensor and ASIC R&D		✓
5.4.1.1	AC-LGAD Sensor R&D		✓
5.4.1.1.1	AC-LGAD development at IHEP		✓
5.4.1.2	AC-LGAD ASIC R&D		✓
5.4.1.2.1	General requirements		✓
5.4.1.2.2	Data transmission bandwidth requirements		✓
5.4.1.2.3	ASIC architecture		✓
5.4.1.2.4	Single-channel readout electronics		✓
5.4.1.2.5	Prototype		✓
5.4.1.2.6	Power distribution and grounding		✓
5.4.1.2.7	Radiation tolerance		✓
5.4.1.2.8	Monitoring		✓
5.4.1.2.9	Development plan and schedule		✓
5.4.2	OTK design		✓
5.4.2.1	OTK barrel design		✓
5.4.2.2	OTK endcap design		✓
5.4.3	Readout electronics		✓
5.4.3.1	Front-end board		✓
5.4.3.2	Concentrator card and power distribution		✓
5.4.3.3	Slow control and monitoring		✓
5.4.3.4	Clock distribution		✓
5.4.4	Mechanical and cooling design		✓
5.4.4.1	Barrel local support		✓
5.4.4.1.1	Materials		✓
5.4.4.1.2	Structural characterisation		✓
5.4.4.1.3	Thermal characterisation		✓
5.4.4.2	Endcap local support		✓
5.4.4.2.1	Materials		✓
5.4.4.2.2	Structural characterisation	(d)	✓
5.4.4.2.3	Thermal characterisation		✓
5.4.5	Prospects and plan	(e)	✓
5.5	Beam background estimation	(f)	✓
5.6	Performance	(g)	✓
5.6.1	The global performance of the tracking system		✓
5.6.2	The performance of silicon tracker (barrel)		✓
5.6.3	The performance of the transition zone (barrel+end-cap)		✓
5.6.4	The performance of forward tracking (end-cap)		✓

请大家加快进度!

# 关于组内组织方面的一些考虑

硅径迹探测器

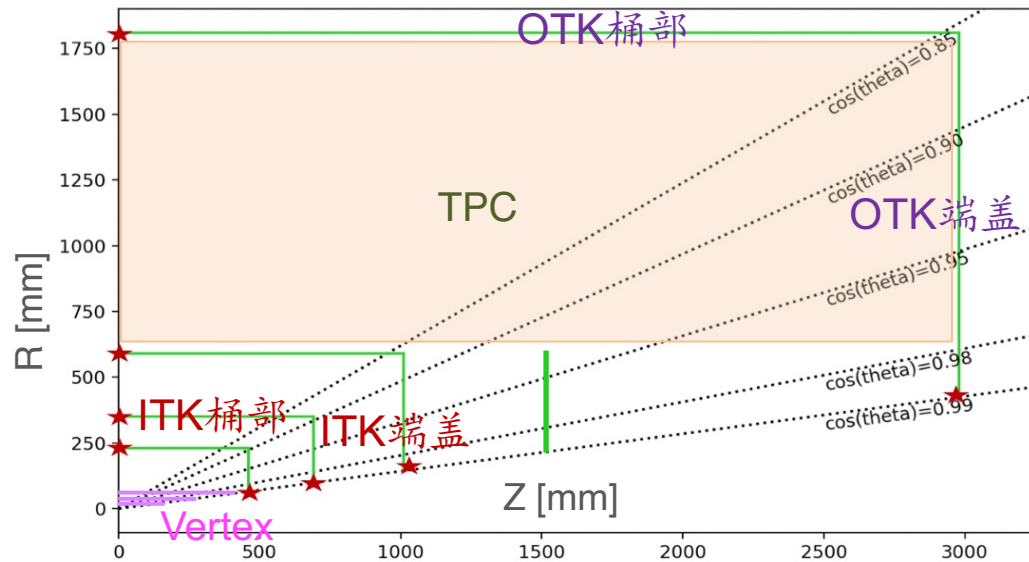
内径迹硅探测器 (ITK)

电子学系统

探测器排布和软件模拟

机械和冷却

外径迹硅探测器 (OTK)



- 组里整个气氛还是觉得缺乏活力。很多的组内成员我不认识，或者不清楚你们做的工作，这个对积极性的发展不好。
- 我想组织3个子探测器技术+电子学+机械（冷却）+软件每周在组里安排一个报告。

- 好的报告直接推荐到CEPC Day，也让你们做得工作能被更多的人认识。
- 另外，好的工作也会推荐代表组里在外面做会议报告。