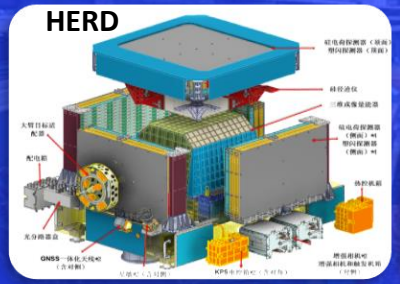
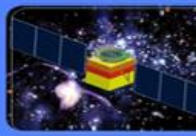


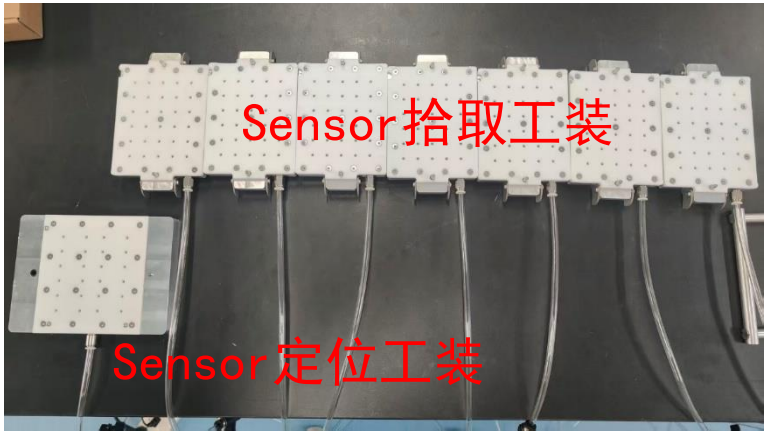


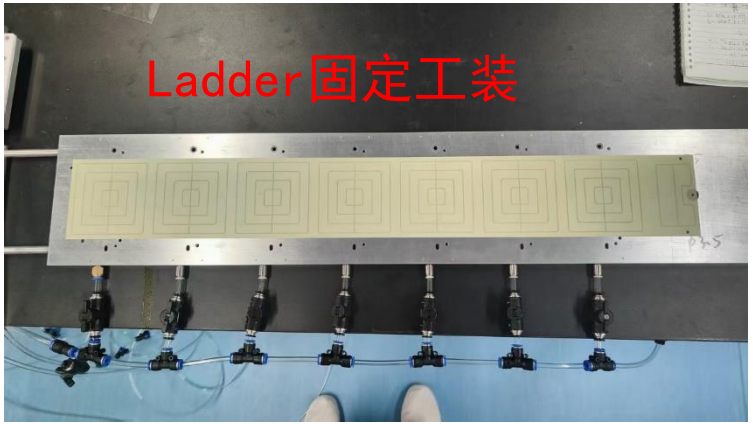
HERD SCD和STK组装方案研究

蔡孟珂 巩克云 金梁程龙 王聪聪 王昊洋 徐子骏 袁煦昊

2026.6.26

1. 组装准备





工装+气路准备

2. Pick up优点

结合AMS和Atlas Itk两个项目经验提出pick up组装方法：

① 芯片朝向组装过程中直接可见

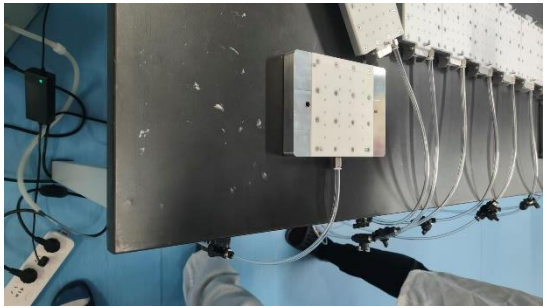
② 便于检查芯片质量和洁净度

③ 组装速率快

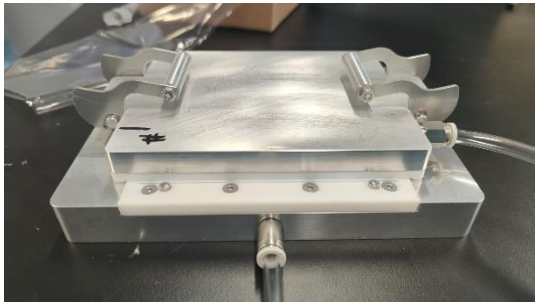
④ 培训时间短和操作难度低

需要验证该方法是否满足HERD项目需求。

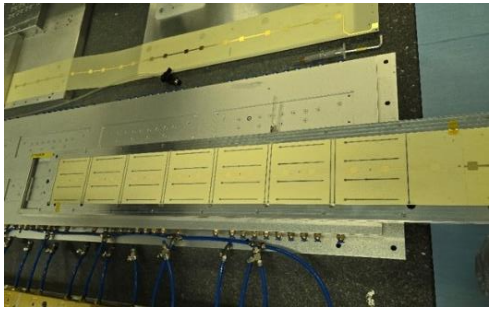
3. P型ladder装配流程



1、sensor定位

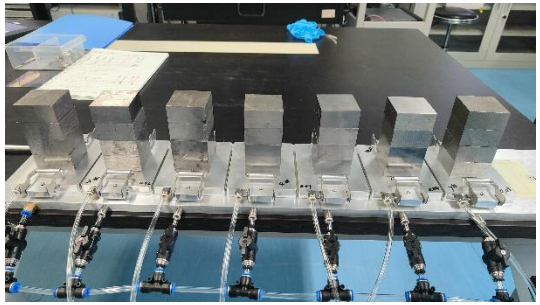


2、sensor拾取



3、点胶

4、贴片固定

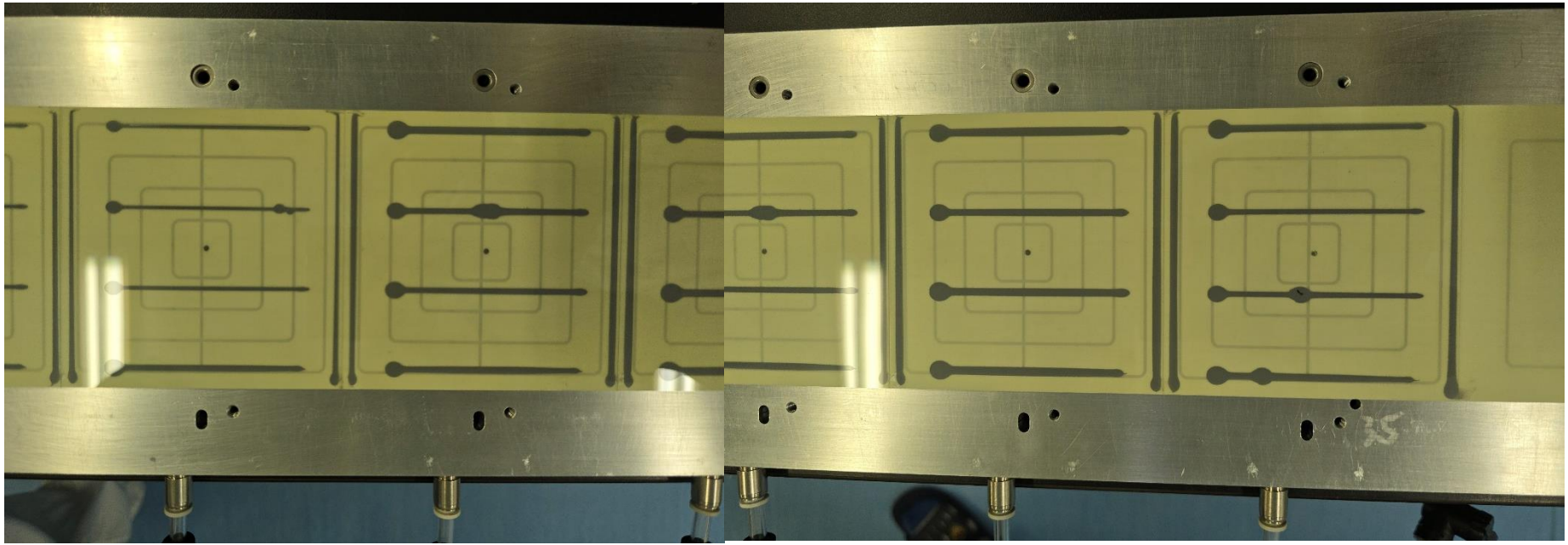


5、配重，固化

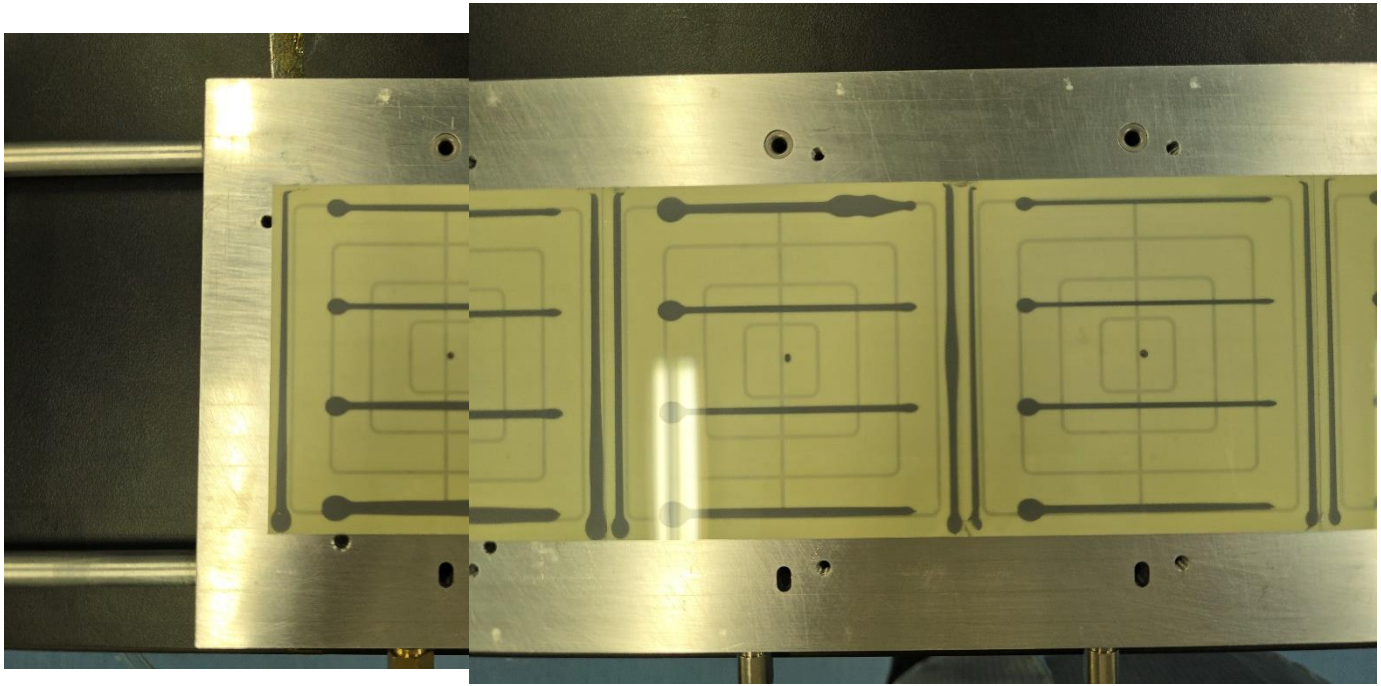
6、ladder完成

4. P型ladder装配效果

与真sensor相同尺寸的玻璃片



4. P型ladder装配效果



4. P型ladder装配效果

组装速度快

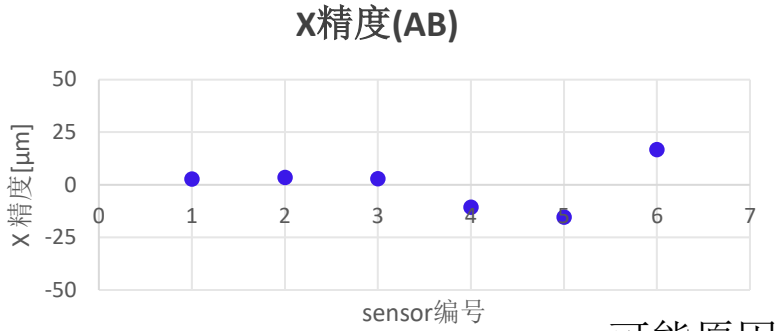
每片sensor独立配重

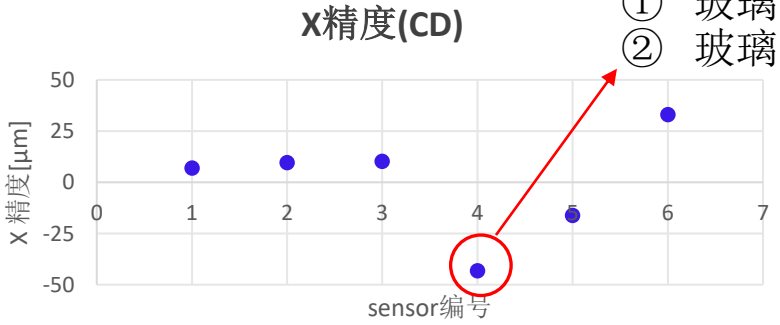
拾取工装独立限高

组装速度快
胶的表干效应减弱

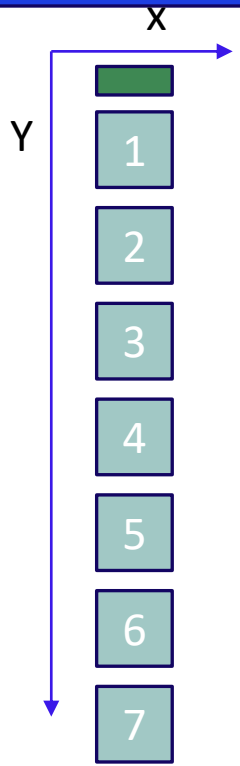
后续验证桌子平整度对胶厚的影响、限高结构聚四氟乙烯换成金属

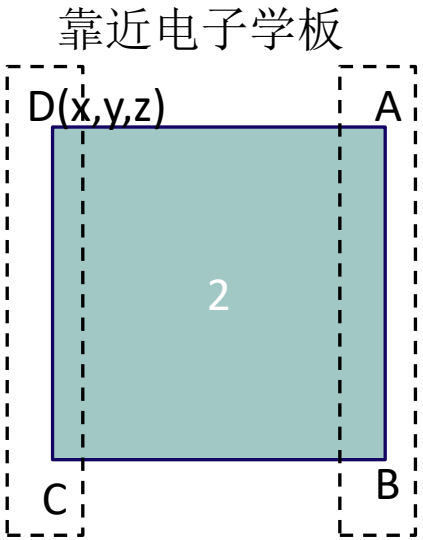
5. P型ladder 的X精度





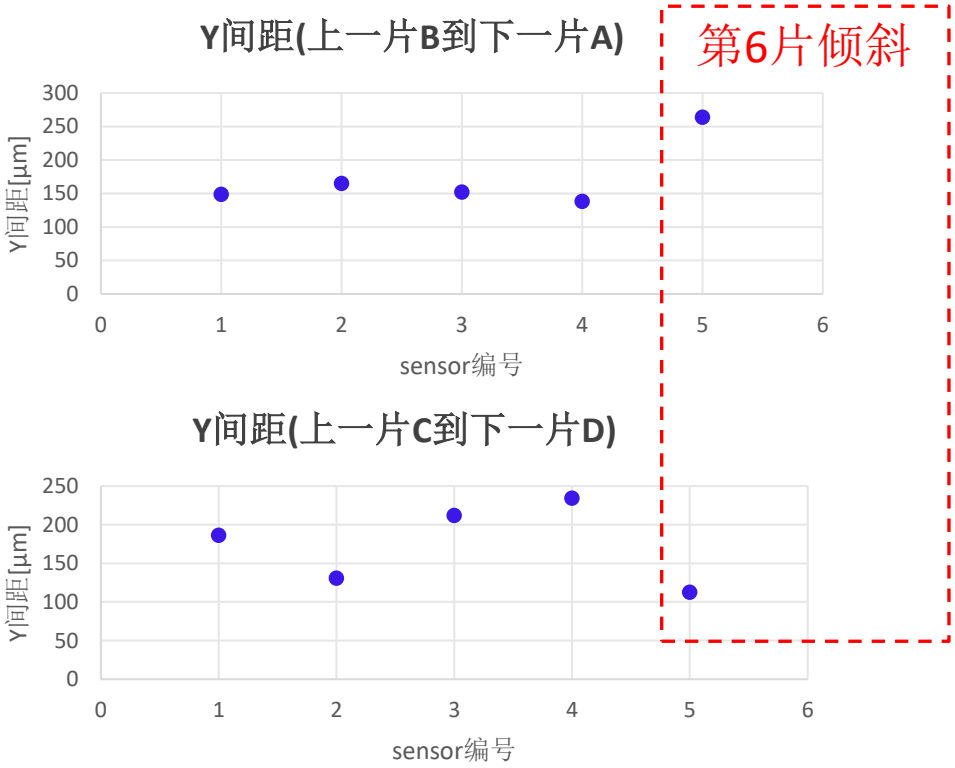
可能原因：
① 玻璃片裁切误差
② 玻璃片旋转角度偏大

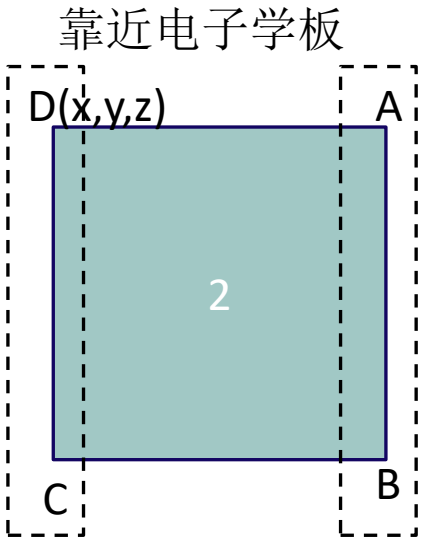




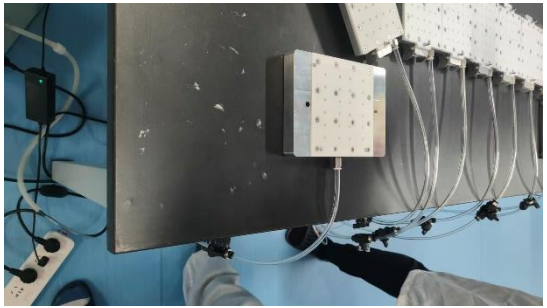
为快速出结果，只测了6片sensor的位置

5. P型ladder 的Y间距

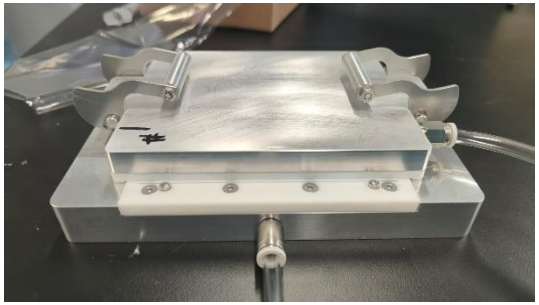




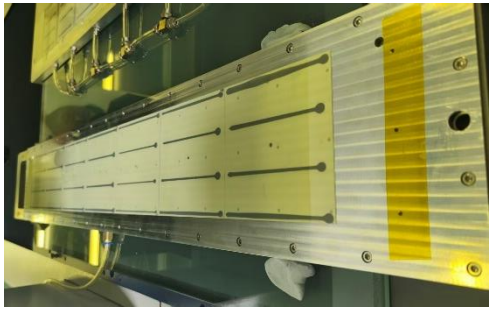
6. Z型ladder装配流程



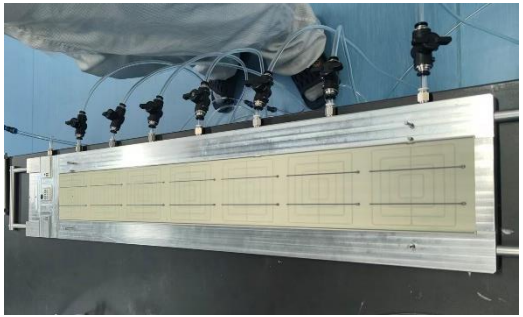
1、sensor定位



2、sensor拾取



3、sensor组装完成



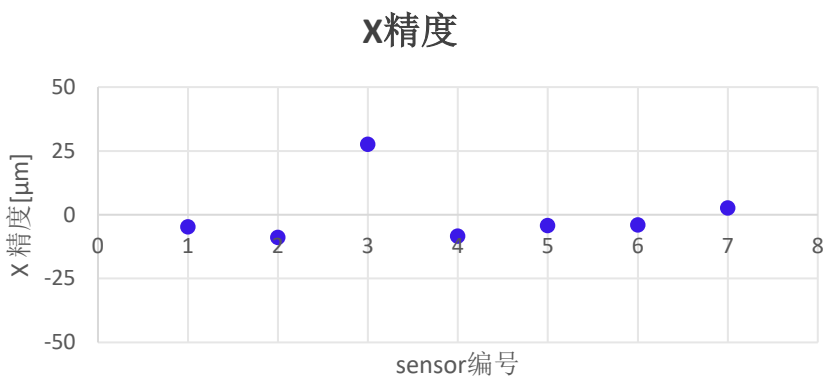
4、Z型柔性版点胶

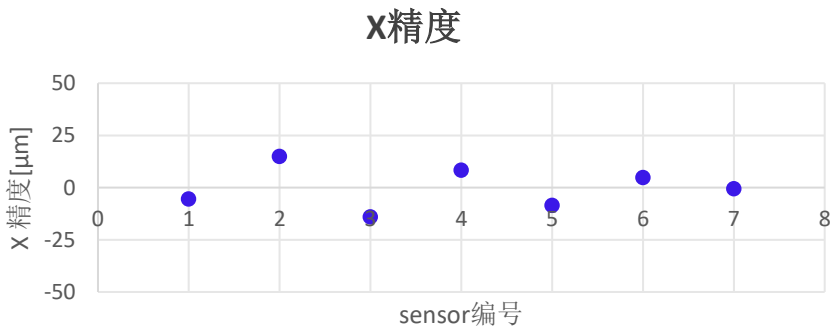
5、Z型柔性版与ladder压合

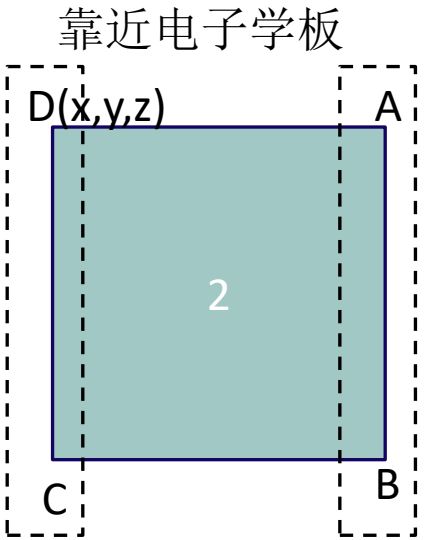
6、ladder组装完成

6. Z型ladder装配流程

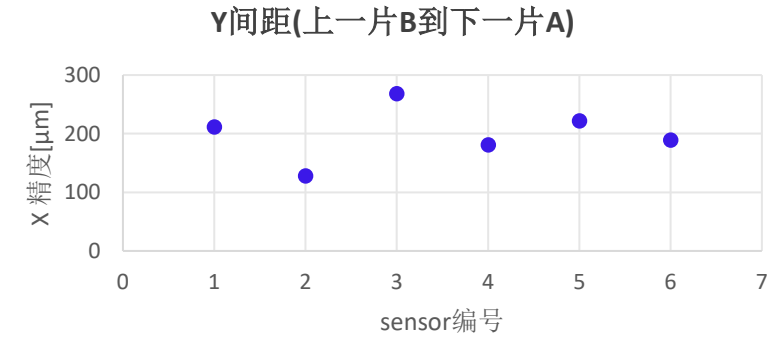
7. Z型ladder 的X精度

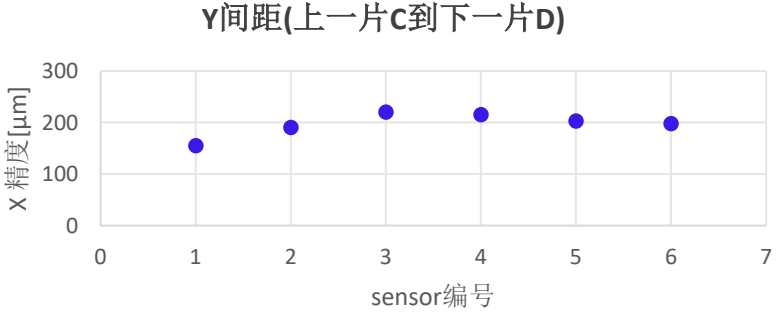


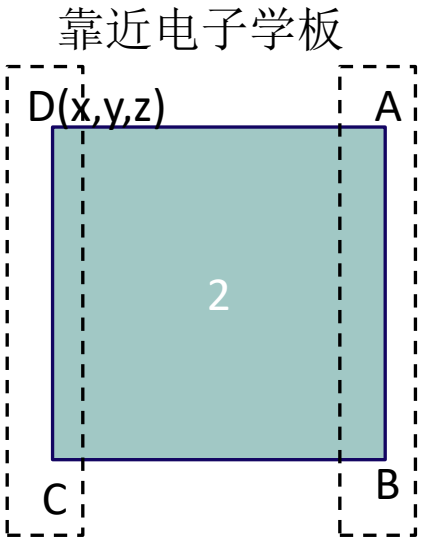




7. Z型ladder 的Y间距





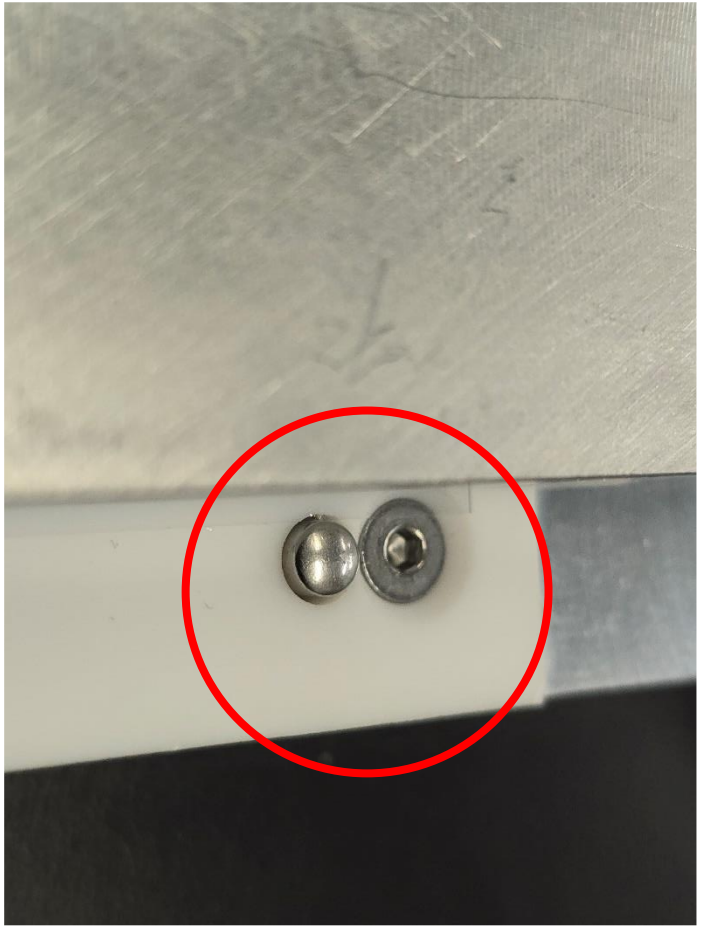


总结

1. 玻璃片几何尺寸精准略差
2. 测量玻璃片四个角精度差
3. 玻璃片与定位销钉摩擦，出现小缺口

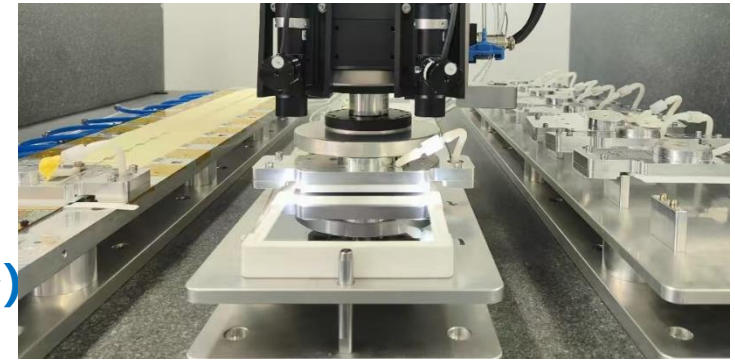
- 工装考虑销钉换成其他材料?
- 减小销钉高度

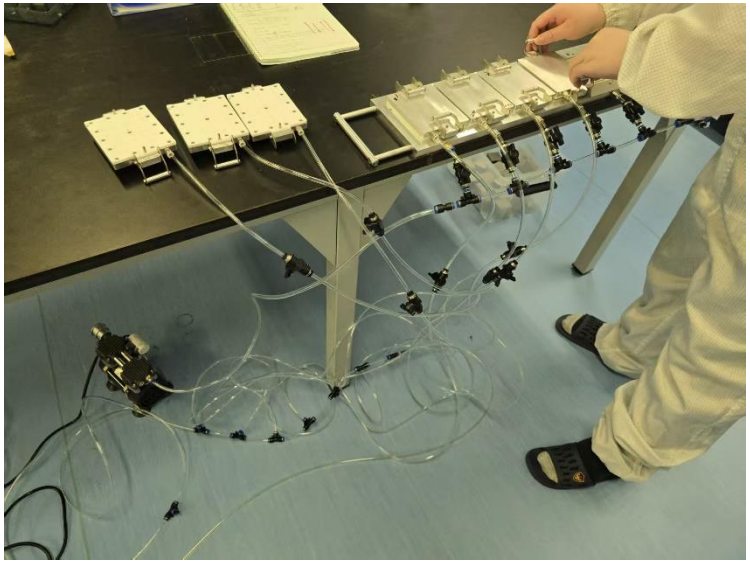
* 玻璃片比硅片更脆，容易出现缺口

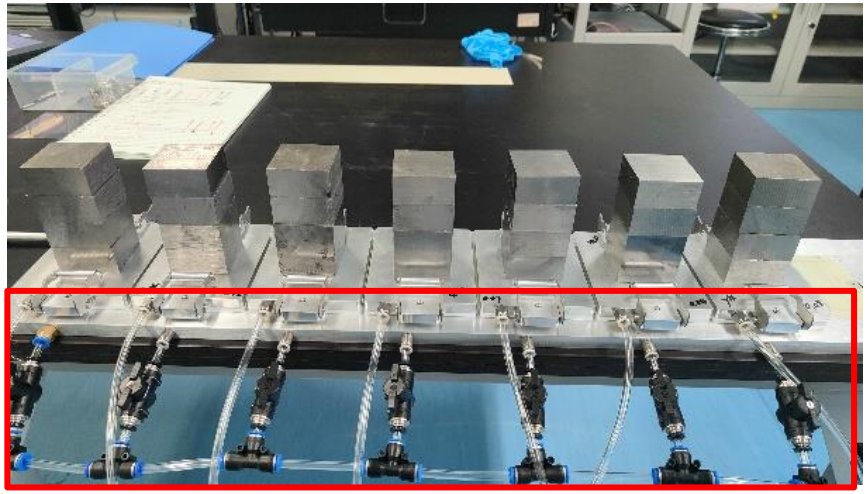


后续改进：

- 配重块标准化
- 真空气路简化（吸附偏压柔性板，比如1路）







这些真空是吸附吸附偏压柔性板。

下一步计划：

1. 用玻璃片继续研究胶厚与桌子平整度关系
2. 结构片验证组装方案
3. 束流实验需要的ladder能否与现在工装匹配