CEPC Silicon Tracker Progress Report (12)

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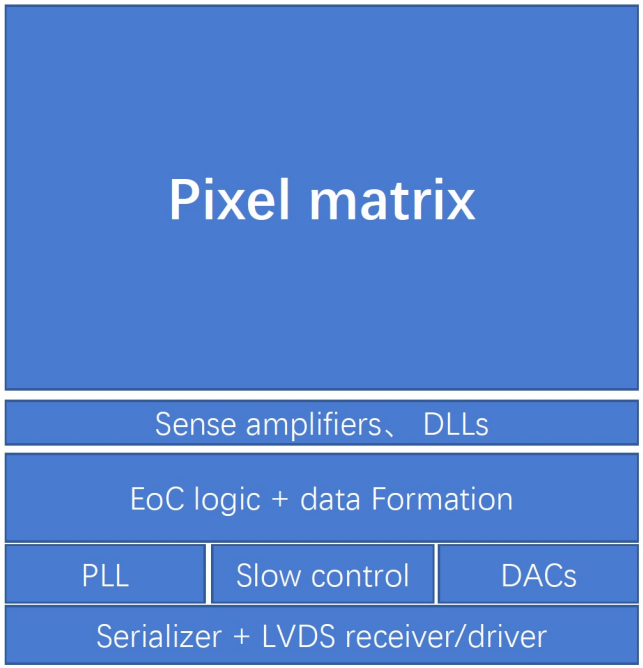
Upcoming MPW Submission Plan for HVCMOS Pixels

- Submission plan update for 2025:
  - Two MPW windows in the first half of 2025: January and April
  - Initial plan: 1 MPW to implement all periphery functions

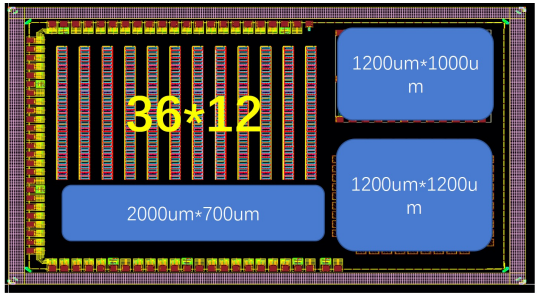
1. **Sensors & Guard ring;**
2. **In-Pixel**
   1. Amps;
   2. Discriminators;
   3. Threshold tuning;
   4. Test/mask structure
   5. Memories;
   6. VCDL;
   7. Fine-time stamp control unit;
3. **Pixel matrix:**
   1. Column-rain, Token-ring & fast or
   2. ···addr. / TS bits / readout method for minimize cross-talk
4. **SenseAmp;**
5. **DLL;**
6. **Biasing:** Bandgap, Current/Voltage DAC;
7. **Slow control interface**:
8. **PLL;**
9. **EoC logic:** interaction with matrix
10. **Data Formation:** data package, scrambler
11. **Fast readout: LVDS** Driver & receiver



- To demonstrate part of key performance by ref-TDR release (June 2025?):
  - 1st submission in January: all basic functions except DAC
  - 2nd submission in April or later 2025: DAC included, all other modules optimized

Preparation Towards Next Submission (COFFEE3 …)

- 15 active designers:
  - preparation for some modules started right after COFFEE2
  - A few modules already in the layout phase
  - However, it remains an extremely challenging task



General layout planning

Pixel size: 34 μm×144 μm

MPW size：3 mm ×4 mm

1. **Top integration、DFT、 verification** 周扬、+ 多方合作
2. **Sensors & Guard ring** 邓建鹏、赵梅
3. **In-Pixel**
   1. Amps;
   2. Discriminators; 李乐怡、李鹏戌、陆卫国
   3. Threshold tuning, in-pxel DAC;
   4. Test/mask structure
   5. Memories; 李乐怡、周扬
   6. VCDL;
   7. Fine-time stamp control unit; 赵泽轩、魏晓敏
4. **Pixel matrix：**
   1. Column-rain, Token-ring, fast or …addr. readout method for minimize X-talk 李乐怡、周扬
   2. TS bits 、clock gating 、 readout method for minimize power 赵泽煊、魏晓敏
5. **SenseAmp;** 李乐怡、周扬
6. **DLL；** 赵泽轩、王雨颉、施展、魏晓敏
7. **EoC logic + Data Formation: 64**b/66b, serializer 张晓旭、陈洋、魏晓敏
8. **Biasing：Bandgap， Current/Voltage DAC;**
9. **Slow control interface**: 张晓旭、魏晓敏
10. **PLL：** 王雨颉、施展
11. **Fast readout：** driver & receiver 陈洋、施展

新加入：
吴慧敏
谢鑫豪
王小龙

Staff and students from IHEP, NWPU, DMU, SDU, NJU, …