

Discussion about next HPK productions for EIC

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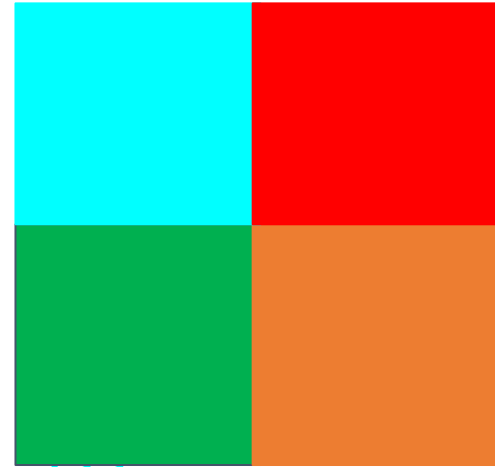
Next HPK Production - Pixel Sensors

Our baseline: 32*32 pixels with 500 um pitch, total area 1.6*1.6 cm²

HPK: one wafer can include twenty 1.6x1.6 cm², two types

My proposal:

- Two wafers: 20 um thick, C-type, 600 pF/cm²
- Each wafer has
 - 10 dies with 50 um metal width
 - 10 dies with 100 um metal width
- A die 1.6*1.6 cm² include
 - 16*16 pixels with 500-um pitch 150 um metal width
 - 16*16 pixels with 500-um pitch varied metal width
 - 10*10 pixels with 750-um pitch varied metal width
 - 8*8 pixels with 1000-um pitch varied metal width



Next HPK Production - Strip Sensors

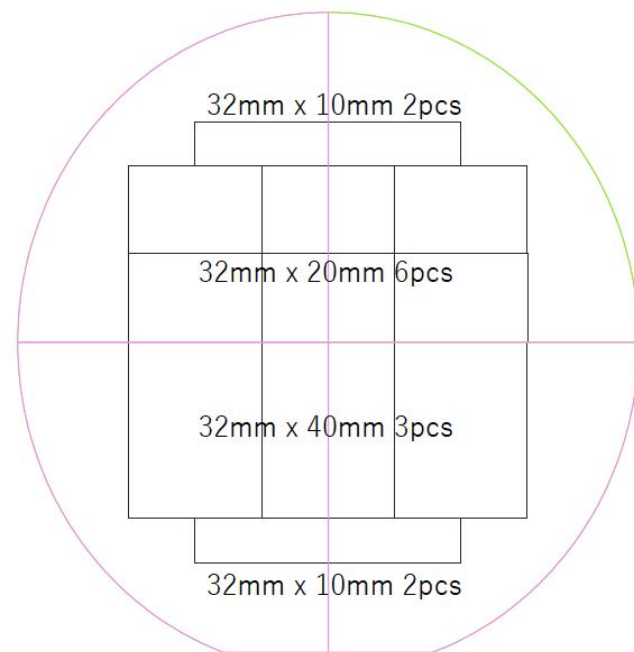
Our baseline: 64*4 strips with 500 um pitch and 1 cm length, 3.2x4 cm²

HPK: one wafer can include four 3.2*1, six 3.2*2, three 3.2*4 sensors

My proposal:

- Assume (require) yield > 50%
- Split 64 strips into:
 - 16 strips with 500 um pitch
 - 16 strips with 750 um pitch
 - 12 strips with 1000 um pitch
- Two wafers: 30 um, E-type, 600 pF/cm²
- Two wafers: 50 um, E-type, 600 pF/cm²

Wafer layout plan



Next HPK Production - Testing Plan

- Test board:
 - Design and assembly by UCSC (need to know the actual dim.)
 - 10+ available in Q1 2024. 2nd batch with FY23 UIC fund (10k\$)
- Infrared laser test:
 - UCSC, UIC/LBNL/FNAL, BNL, ...
- Beam test:
 - DESY, June 10-23, 2024
https://particle-physics.desy.de/test_beams_at_desy/index_ger.html
 - Anyone join (Jenni?)
- Radiation hardness test (Simone)
 - Uncertainty with LANSCE
 - Looking for other places