Introduction

- Next HPK production(s), ideally tested in Spring 2024 focus on
  - Improve timing resolution for strip sensor, and spatial resolution under the metal for pad sensors
  - Produce large sensors in preparation for module prototyping, cost/yield estimates
  - Test beam time at DESY in June 10-23 reserved
  - Also checking Fermilab test beam

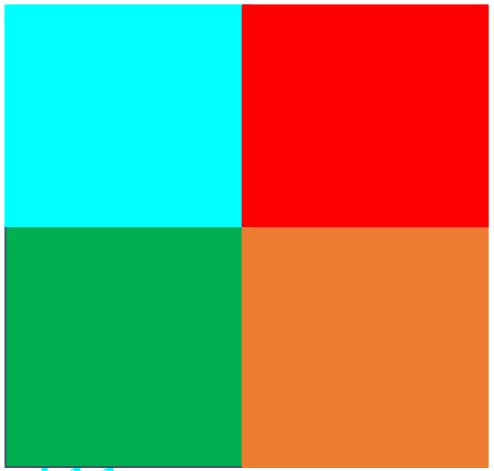
- Small FBK production through RD50, available at the end of year (?)

- New BNL productions in FY24: ?

Next HPK Production - Pixel Sensors

Our baseline: 32*32 pixels with 500 um pitch, total area 1.6*1.6 cm^2

HPK: one wafer can include twenty 1.6x1.6 cm^2, two types



My proposal:

- Two wafers: 20 um thick, C-type, 600 pF/cm^2
- Each wafer has
  - 10 dies with 50 um metal width*
  - 10 dies with 100 um metal width*
- A die 1.6*1.6 cm^2 include
  - 16*16 pixels with 500-um pitch 150 um metal width
  - 16*16 pixels with 500-um pitch, either 50 or 100 um metal width
  - 10*10 pixels with 750-um pitch, either 50 or 100 um metal width
  - 8*8 pixels with 1000-um pitch, either 50 or 100 um metal width

Next HPK Production - Strip Sensors

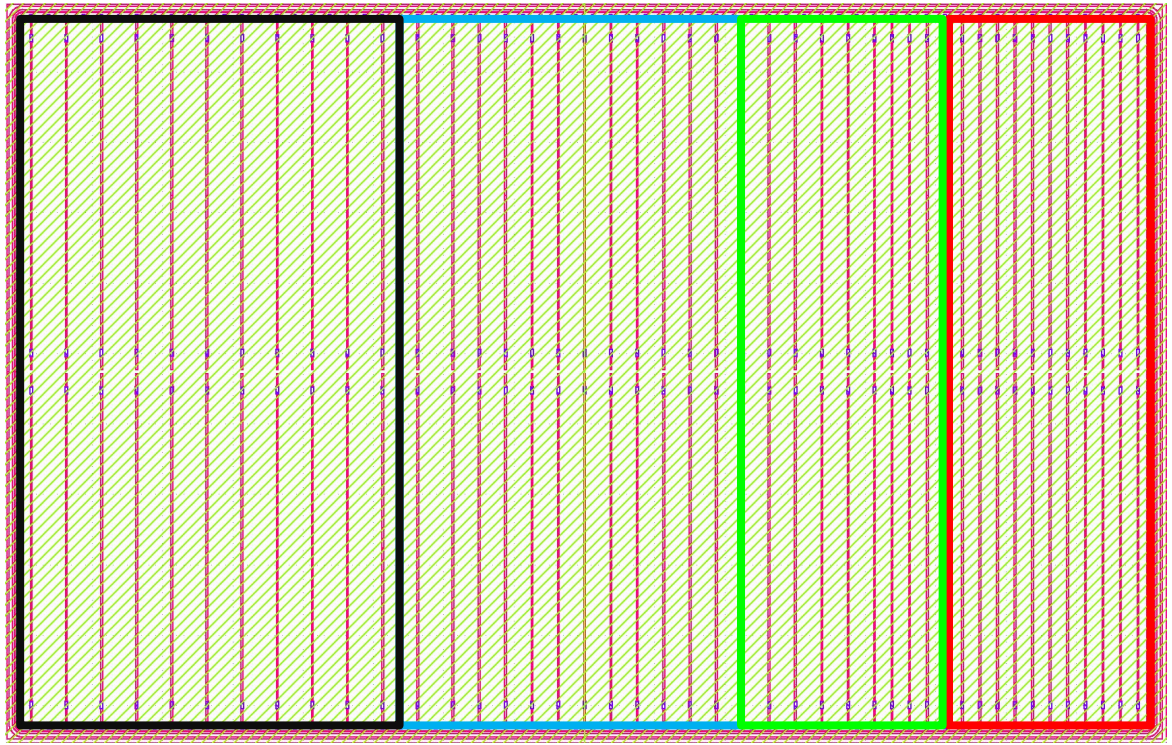
Our baseline: 64*4 strips with 500 um pitch and 1 cm length, ~3.2x4 cm^2

HPK layout: a wafer include four 3.2*1, six 3.2*2, three 3.2*4 cm^2 sensors

My proposal:

- Still have four 3.2*1, six 3.2*2 and three 3.2*4 cm^2 sensors on a wafer as the HPK layout. But instead of 64*N (N=1, 2, or 4) strips on a sensor, have 4 regions with different pitch/width on a sensor, namely
  - 12xN strips with 500 um pitch, 1 cm length, 40 um width
  - 12xN strips with 500 um pitch, 1 cm length, 50 um width
  - 12xN strips with 750 um pitch, 1 cm length, 50 um width
  - 11xN strips with 1000 um pitch, 1 cm length, 50 um width
  - The sensor area will still be 3.2*1, 3.2*2 or 3.2*4 cm^2
- Assume (require) yield > 50%, produce
  - Two wafers: 30 um, E-type, 600 pF/cm^2
  - Two wafers: 50 um, E-type, 600 pF/cm^2

Strip Sensors



Make ALL the strip sensors with

- 12xN strips with 500 um pitch, 1 cm length, 40 um width
- 12xN strips with 500 um pitch, 1 cm length, 50 um width
- 12xN strips with 750 um pitch, 1 cm length, 50 um width
- 11xN strips with 1000 um pitch, 1 cm length, 50 um width

while the sensor area will still be 3.2*1, 3.2*2 or 3.2*4 cm^2