

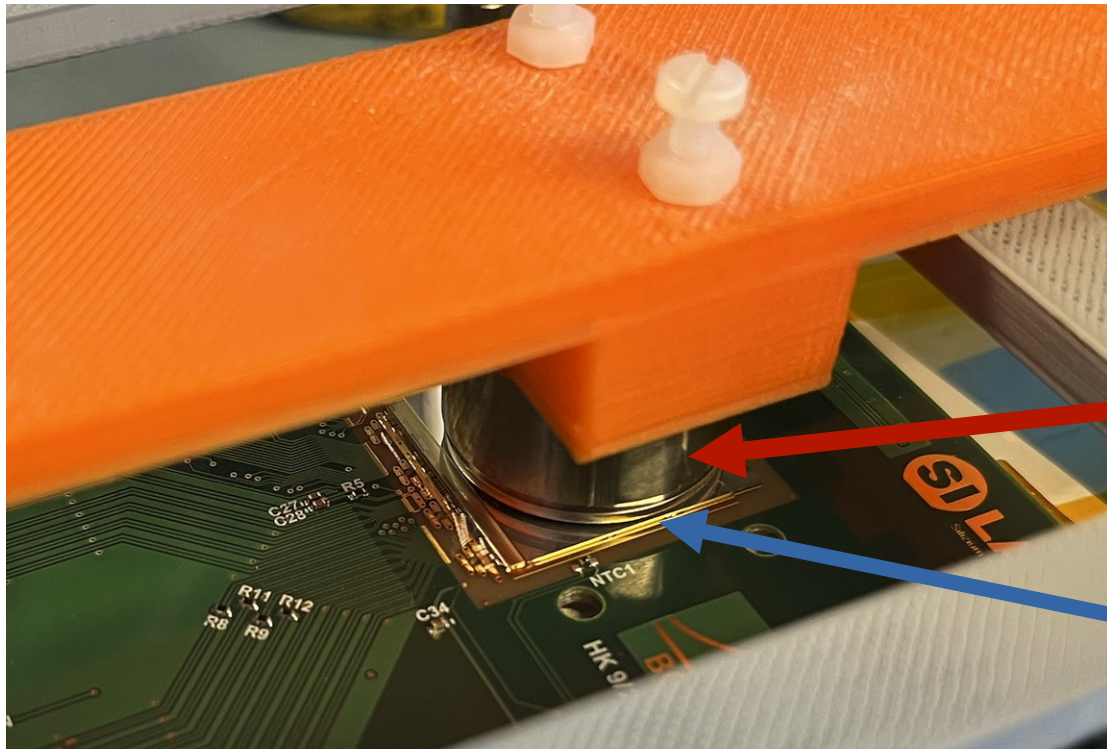
Silicon Tracking Detectors Part 1

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HEPIC summer week
SLAC, June 2025

Close-up of ATLAS pixel detector, installed in 2007

- 2.2G decays / second
- Place source right on top of a hybrid pixel module

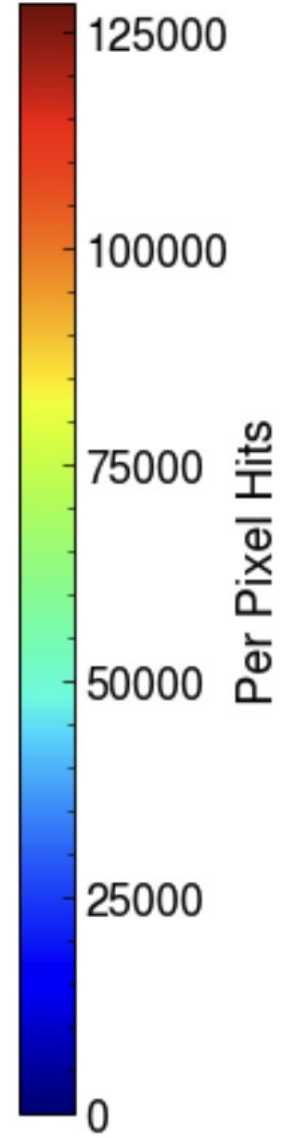
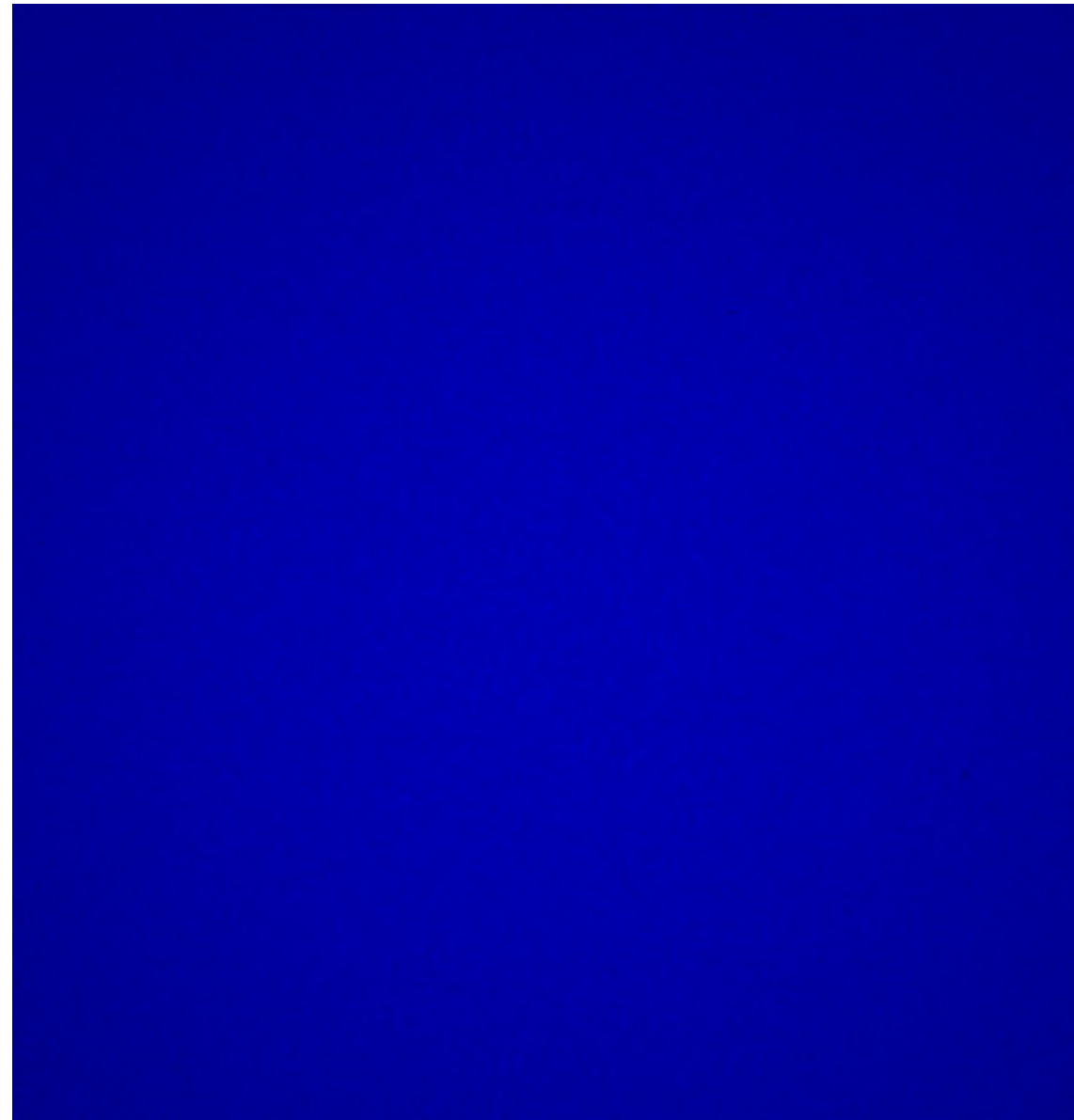
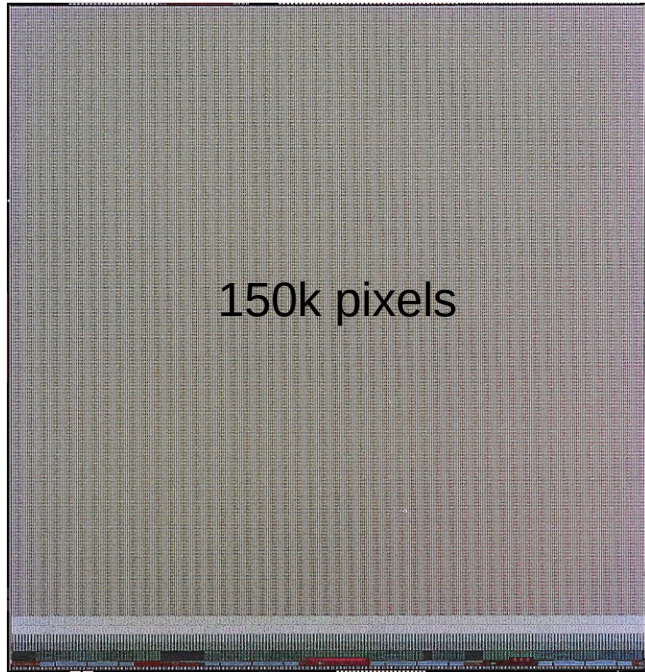


(spoiler, we're going to record each individual decay)

Source

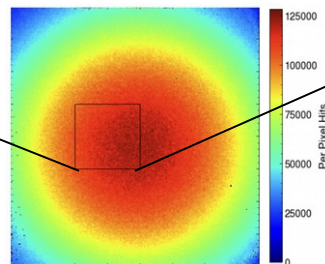
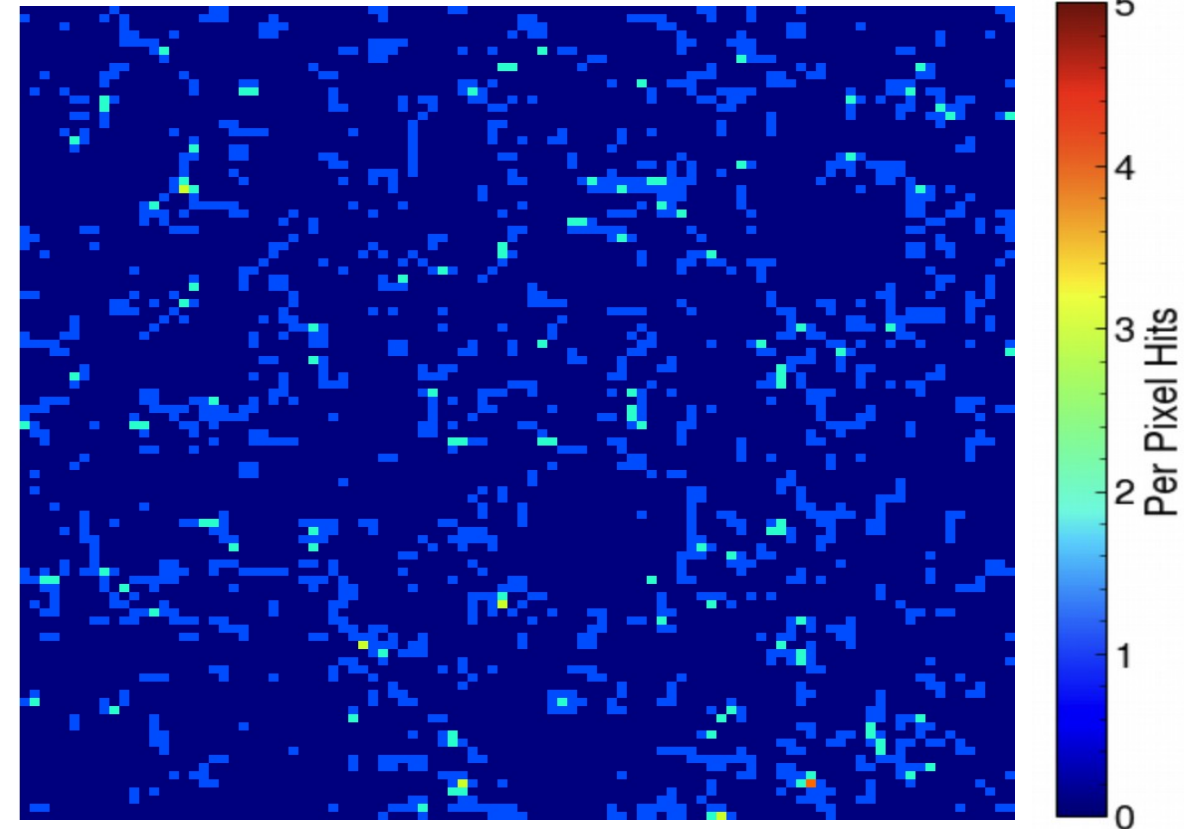
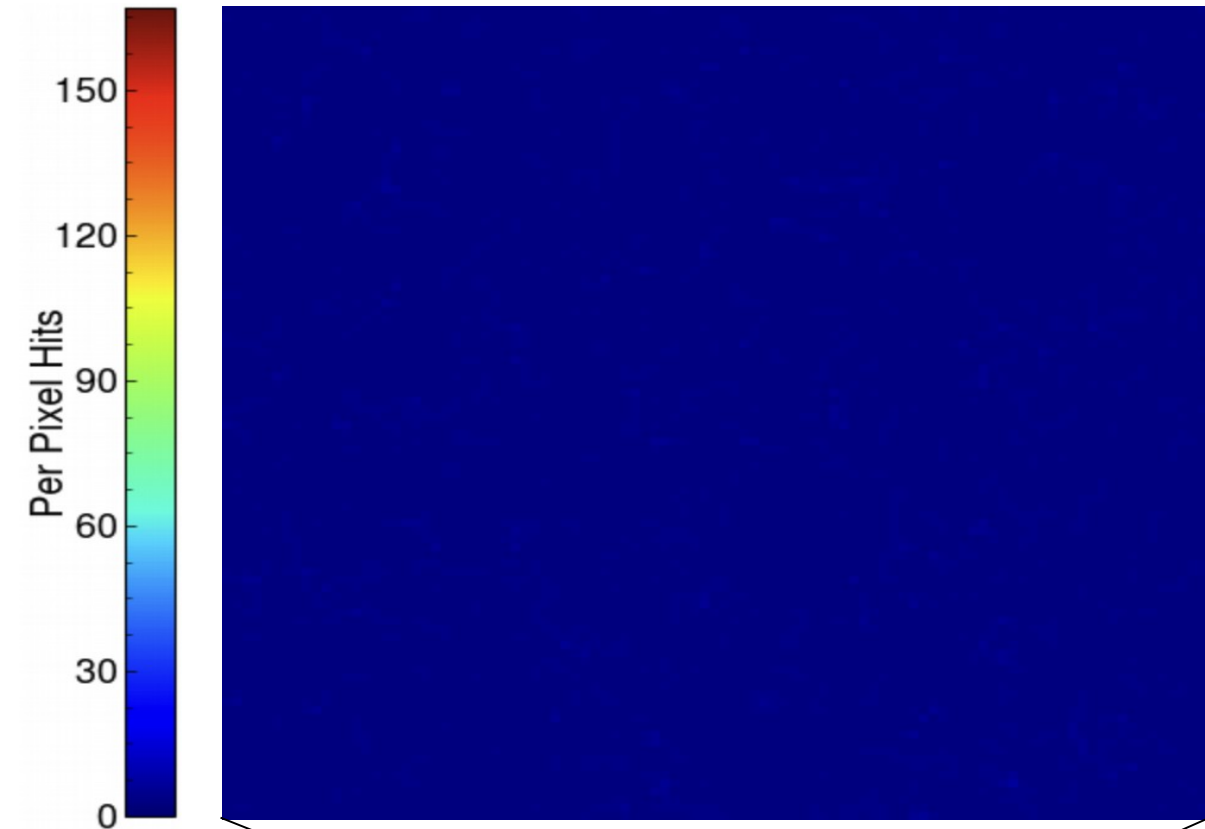
sensor

2cm

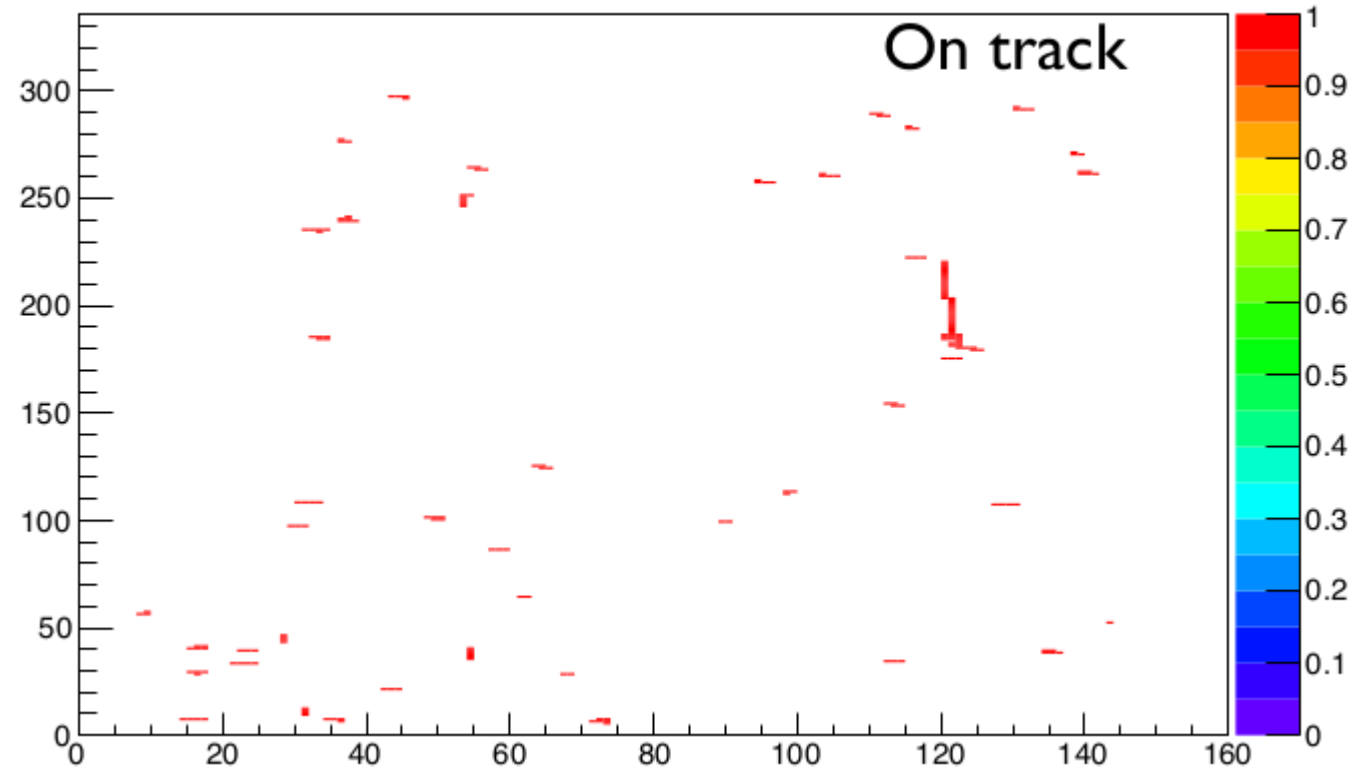


Cumulative

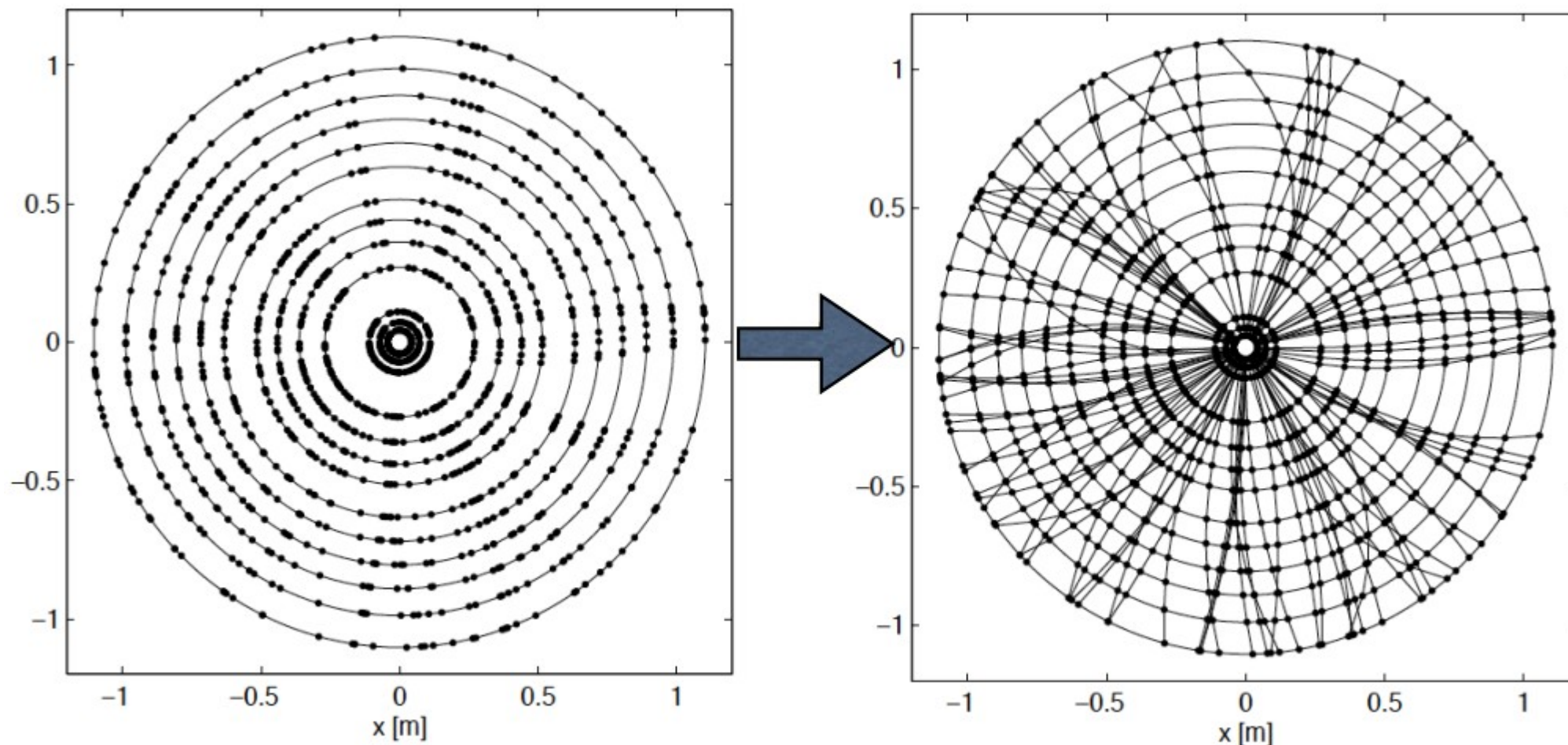
Instantaneous

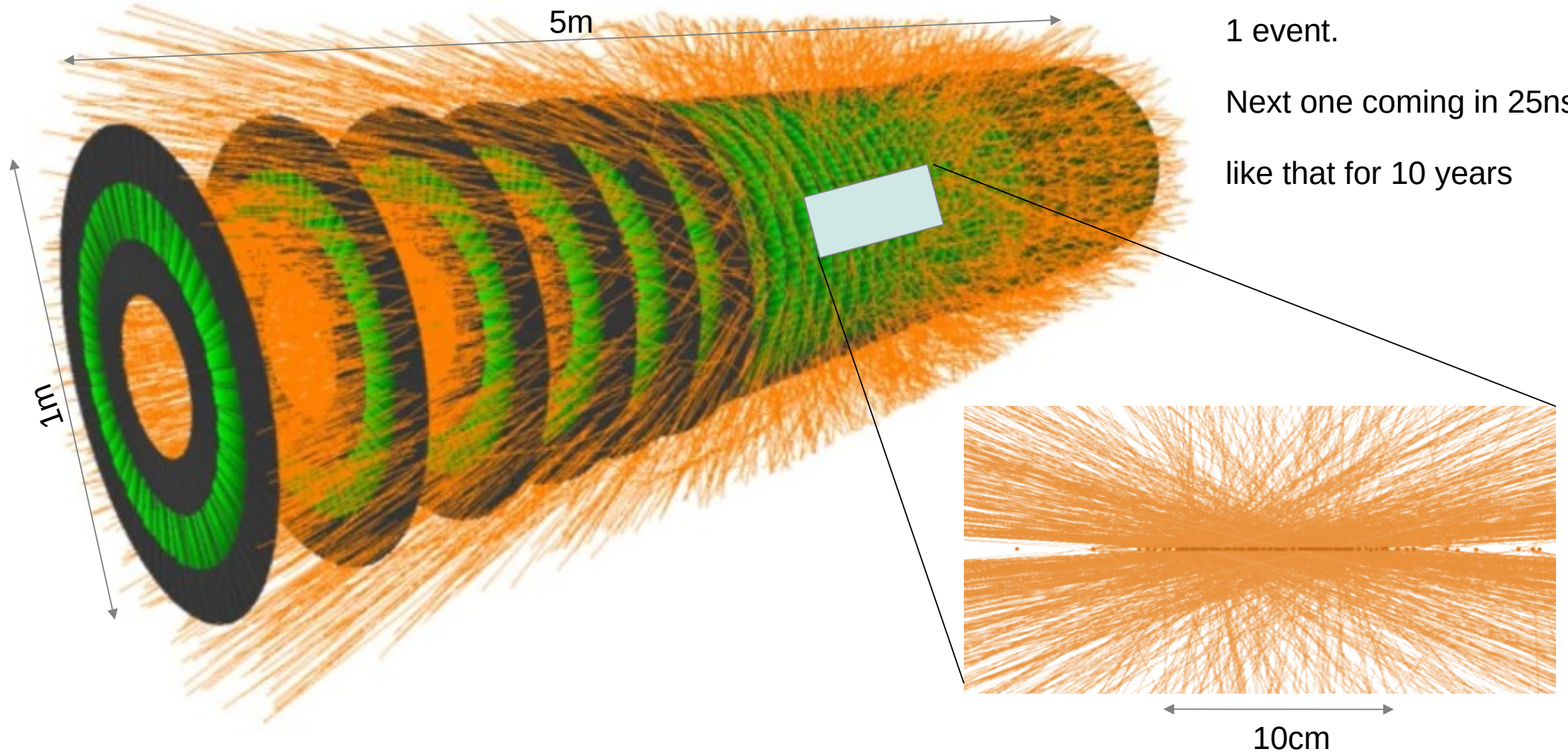


L0_B11_S2_M6C Pixel Occupancy

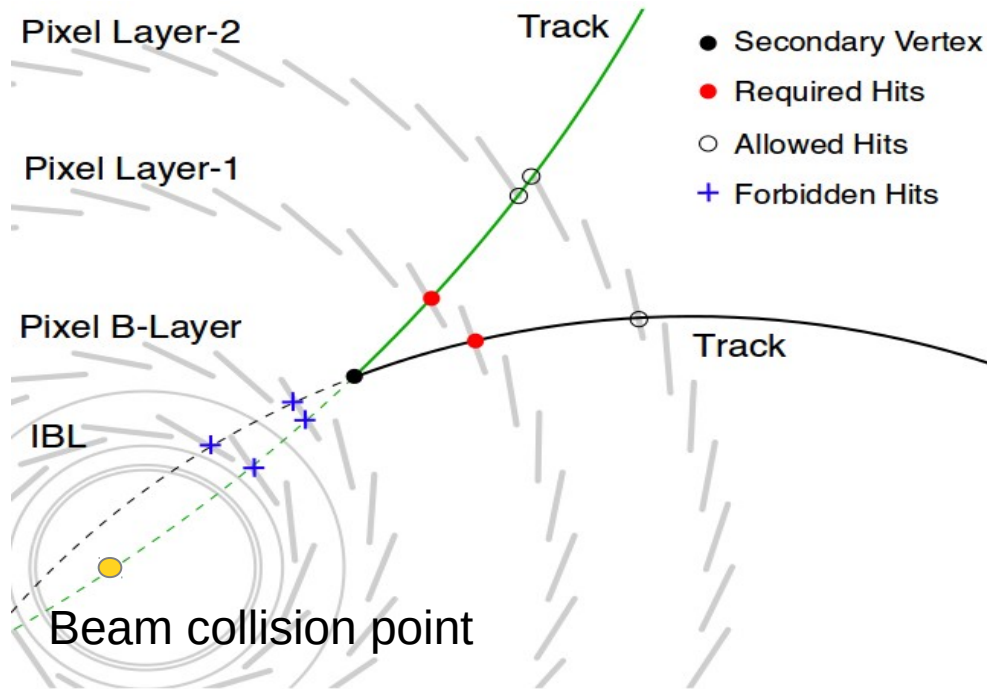


But there are thousands of chips and so thousands of points in each 25ns snapshot



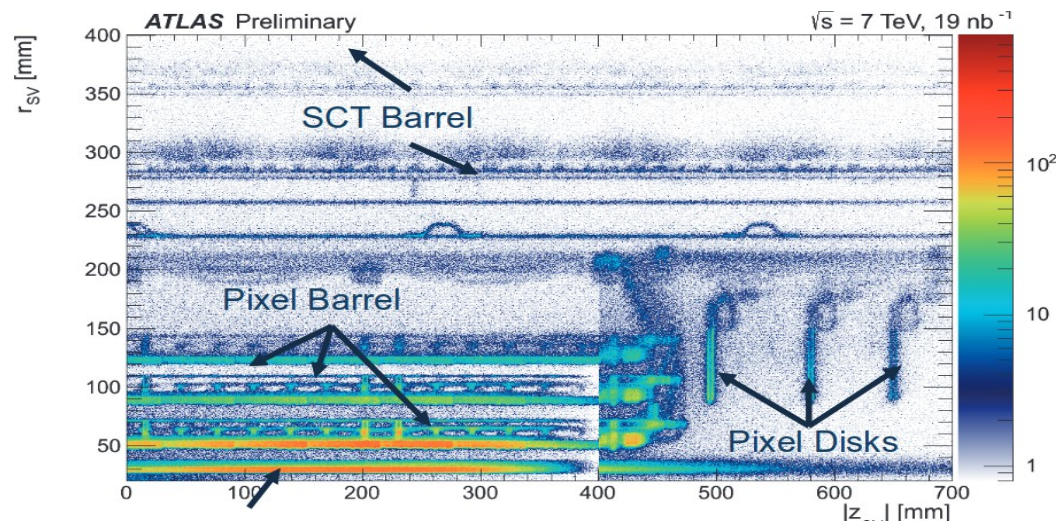
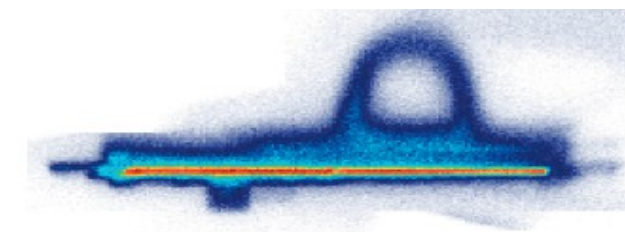
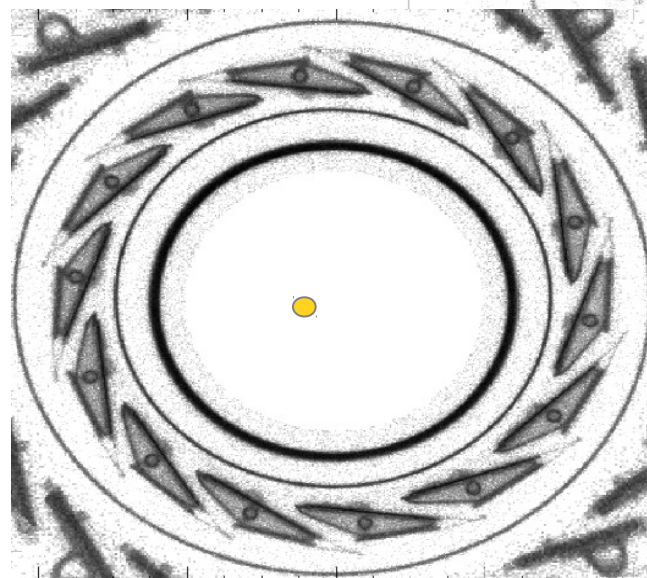
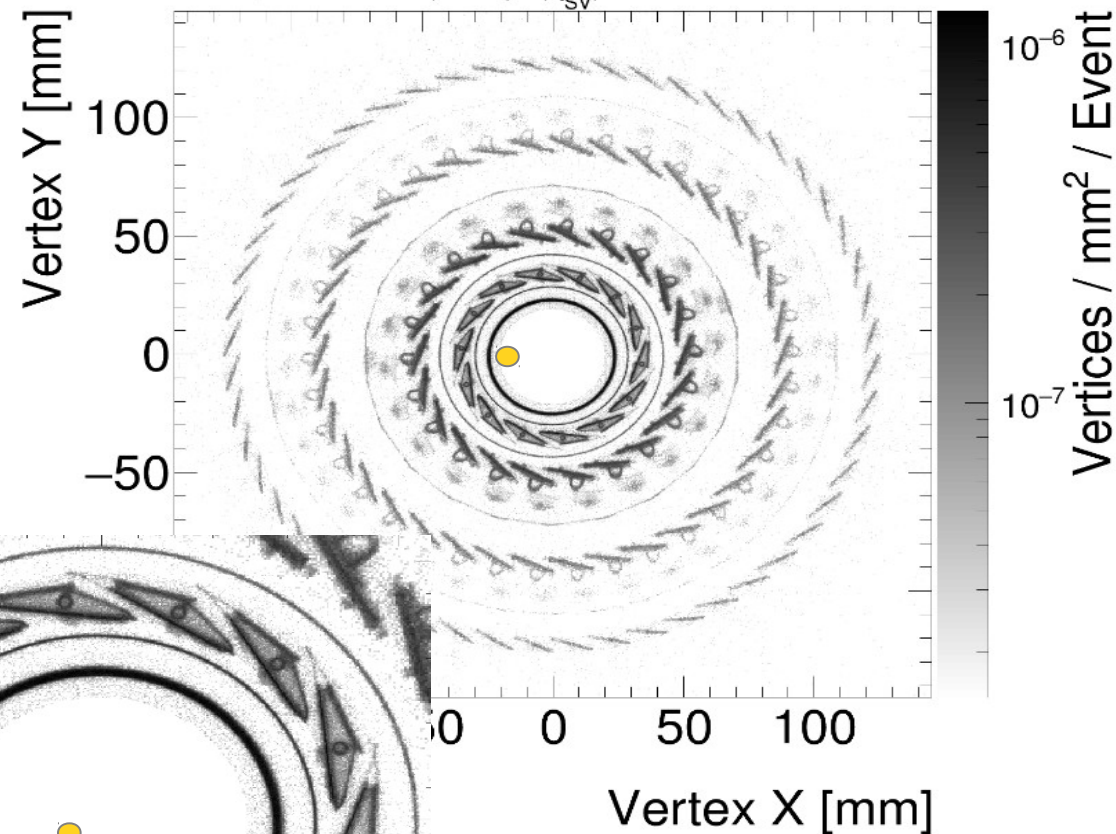


selfie



ATLAS Preliminary

Data $\sqrt{s} = 13$ TeV (2015) $|\eta_{sv}| < 2.4$



But this is the basic information.
A bunch or rectangles in ~empty frames

L0_B11_S2_M6C Pixel Occupancy

