

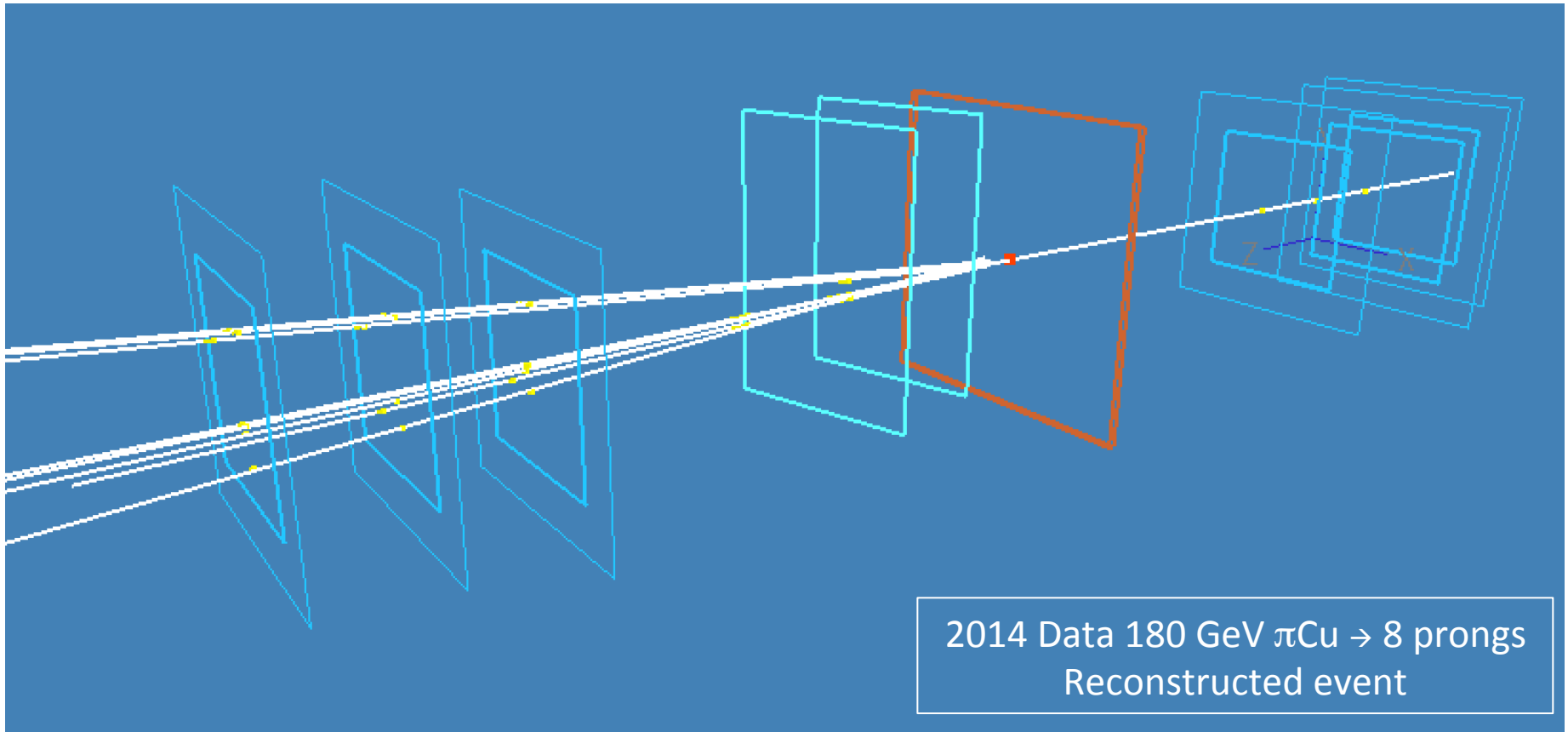
SOIPIX Beam Test Program (July 29th – August 5th)

M. Battaglia

Multi-purpose beam test of pixel sensors (hybrid and monolithic)
using interaction target (two-track separation) and magnetic field (Lorentz angle)

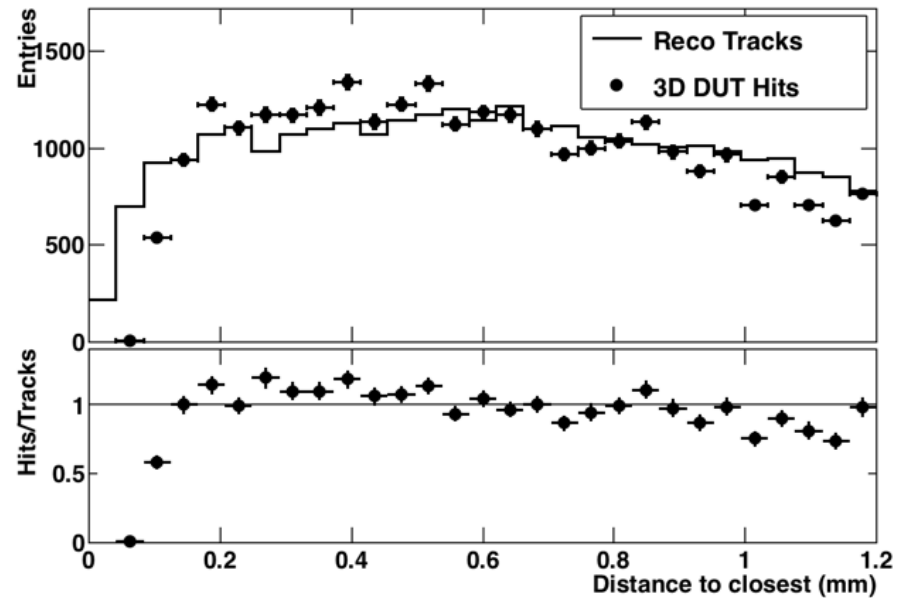
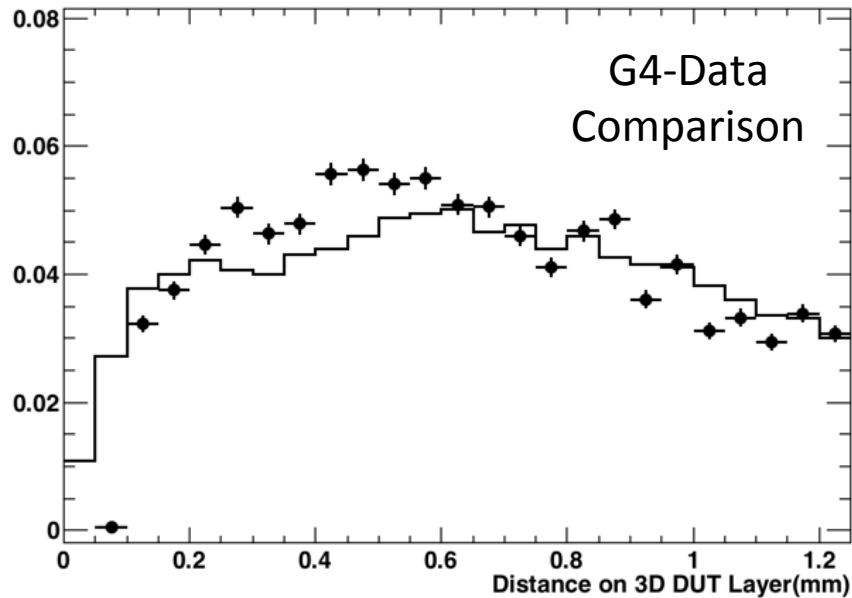
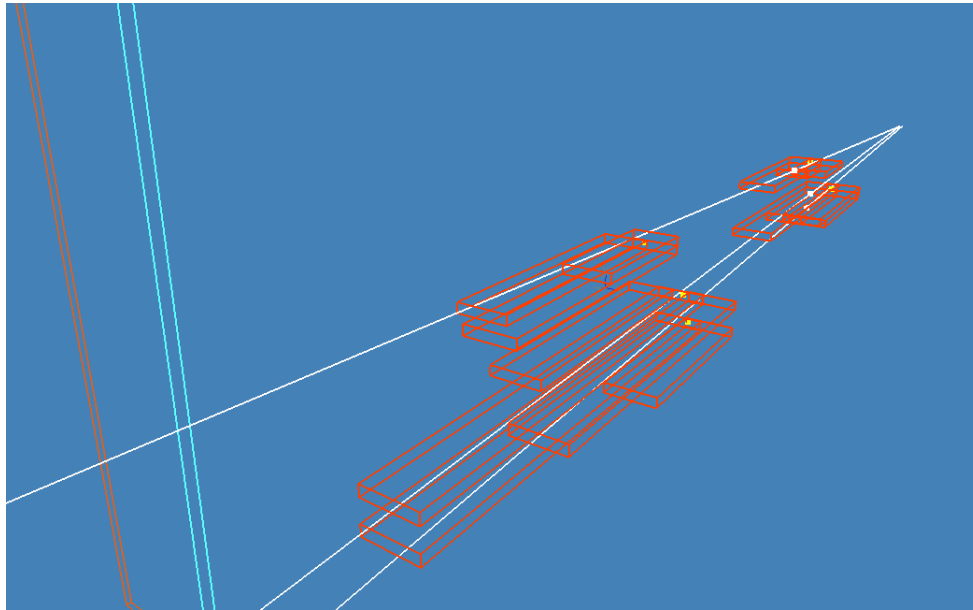
UCSC, LBNL, U. Manchester, CERN

Study two-track separation for ATLAS IBL and future collider vertex trackers; similar experiment carried out on H4 (SOI pixels 150 and 300 GeV π) in 2011 [NIM 681 (2012) 61-67] and on H6 (ATLAS IBL 120 GeV p) and H8 (ATLAS IBL 180 GeV p) in 2014, now we want to add the B field to validate physics simulation.



Two-track separation

2014 H8 data taking (180 GeV π preliminary results)



Use CERN FEI-4 telescope based on DBM modules modified for use in magnetic field (test in parasitic mode w/o B field in May, possibly test in B field in June (?));

Detectors under test: ATLAS IBL planar and 3D pixels, monolithic R&D pixel structures (SOI, HR-CMOS and HV-CMOS).

Need intense B field (ATLAS 2 T): Can operate Morpurgo magnet at 1.9 T ?
(Can perform quick test of telescope module in the magnet in June ?);

Need high hadronic interaction rate, small particle opening angle and stiff tracks:
would prefer 300 GeV beam, either charge fine but must know in advance
(detector position along beamline);

Need platform on rail up to ~30-40 cm from the beamline.

Beam Test Tentative Plan:

Wed Jul 29th Installation and survey

Thu Jul 30th Alignment and test run (no Target, B=0)

Fri Jul 31st Interaction target run (B=1.6/1.9T)

Sat Aug 1st Interaction target run (B=1.6/1.9T)

Sun Aug 2nd Interaction target run (B=1.6/1.9T)

Mon Aug 3rd Monolithic pixel tests (no Target, B=0)

Tue Aug 4th Monolithic pixel tests (no Target, B=0)

Wed Aug 5th Remove equipment