Short overview of WP8 studies

by Helmut Burkhardt / CERN

Covering the ABP related activities,   WP8 hardware activities TAXS, TAXN later by Francisco

team   (myself) with :

Veronica Olsen fellow until 1/2020 (2.5y)

Helena Lefebvre, PhD student Holloway/UK joined 4/2019

Activities (me) :

Background study group (me chair)

LHCC, BE representative

HL-LHC Coordination Working group scientific secretary

+ more general LHC activities

Responsible for high-beta optics in IR1&5 and machine contact person for forward detectors (roman pots),   MAD-X (slicing module)

Simulation, SIXTRACK related

Keyperson : Veronica Olsen   (previously Kyrre Sjoeback, Andrea Santamaria)

Tracking :   priority fast losses, tracking towards experiments   in close collaboration

with WP2 Riccardo de Maria, Alessio Mereghetti, …

WP5 (Roderik Bruce, ..),   WP7 machine protection …

DYNC module,

+ application to crab cavity failures
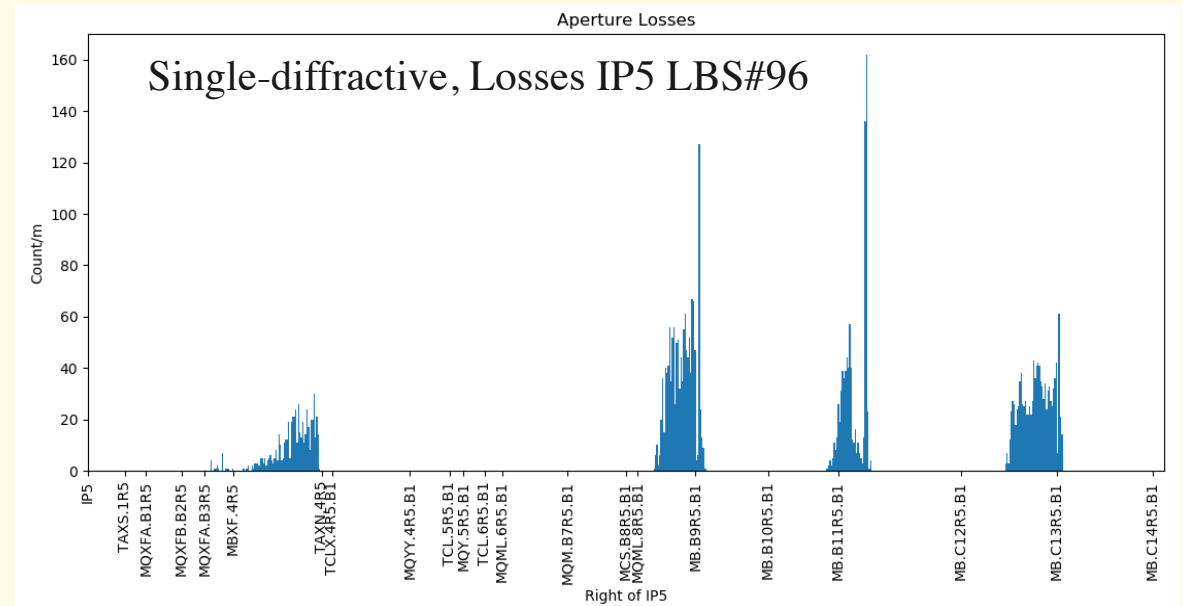

more recently,

presentations, Veronica :

[Simulations, SIXTRACK with pp scattering](#), LBS#94, 8/10/2018

[Proton scattering and losses in HL-LHC](#), last HL-LHC collab. meeting 18/10/2018

[Longer Term Tracking](#), LBS#96 25/03/2019

[SixTrack / BOINC Updates](#), SixTrack Meeting 13/06/2019

Keyperson :   Helena Lefebvre PhD,   as part of her PhD studies

Typically starting from TCTs — based on SIXTRACK   +   detailed tracking using BDSIM

(with support from Royal Holloway, Laurie Nevay, Stephen Gibson et al.)

impact of passive absorbers   TAXS, TAXN (w/o iron)
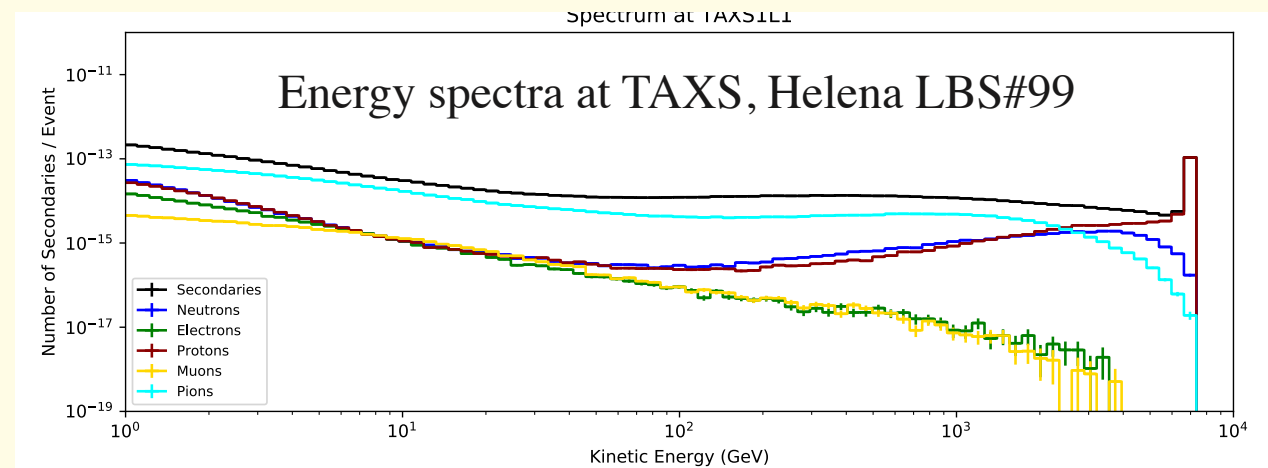
for backgrounds and fast losses

comparison LHC, HL-LHC,   benchmarking with background studies

planned IPAC'20 contribution

Energy spectra at TAXS, Helena LBS#99

presentations, Helena

Simulations using BDSIM, LBS#98

HL-LHC IR1 Beam Backgrounds, LBS#99

Current activities, plans, goals

planned IPAC'20 contribution (WP8 ABP + Frederik, Massimo)

"Improving the luminosity burn-off estimate by considering single-diffractive effects"

with diffusion models + studies of   Elastic and single diffractive losses around IPs

More generally :

Follow up of changes (V1.4, 1.5) and new devices e-lens, crystal in close collaboration with

collimation and machine protection

new (experimental detectors) close to the beam like Roman Pot detectors at HL-LHC

Update beam-gas module, generation of loss distributions at interface plane for experiments