RD51 H4(PPE134) 2022 Test Beam

- Physics scope
- Beam requirements
- Infrastructure needs

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Physics Scope (as of today)

Generic and Application driven R&D

Muon/Tracking: GEM, mm and μRWELL
TPC: Twin and Tandem GEM TPC (Beam monitoring)
Timing: PICOSEC micromegas, FTM
Calorimetry: RPWELL (DHCAL)
Medical: mm (Proton Computed Tomography)

Project driven R&D

HL-LHC: GEM (CMS), mm (ATLAS) and μRWELL (LHCb)
FCC-ee: μRWELL
PBC: mm and GEM (AMBER/COMPASS++)

FE electronics and DAQ

TIGER-GEMROC
VMM3a-SRS

Beam Requirements (as of today)

Week 20-22:

1. mu,pi: highest rate as possible. Polarity and momentum not important (the configuration offering the highest rate is the preferred one). We would like to change from muons to pions several times during the beam period as we did in the past (informing GIF++ in advance).
2. e: 30 GeV/c for about =<8h (first week when GIF parasitic).

Week 28-30:

1. mu,pi: highest rate as possible. Polarity and momentum not important (the configuration offering the highest rate is the preferred one). We would like to change from muons to pions several times during the beam period as we did in the past (informing GIF++ in advance).
2. e: 30 GeV/c for about =<8h (middle or end of the beam – can be just before MD if better).

Week 42-44:

1. mu,pi: highest rate as possible Polarity and momentum not important (the configuration offering the highest rate is the preferred one). We would like to change from muons to pions several times during the beam period as we did in the past (informing GIF++ in advance.
2. e: scan 20-250GeV/c for about =<24h (middle or end of the beam – can be just before MD if better). Cherenkov detector upstream (zone PPE124) for triggering or for measuring precisely the purity of beam configuration. [UNDER DISCUSSION]

Infrastructure Needs (as of today)

Infrastructure Needs (NA)	Week 20-22	Week 28-30	Week 42-44
PPE 134 Installations	Upstream/inside/Downstream Goliath (beam pipe to be removed everywhere)	Upstream/inside/Downstream Goliath (beam pipe to be removed everywhere)	Upstream/inside/Downstream Goliath (beam pipe to be removed everywhere)
GAS zone (887/R-C47)	Installation of several non flammable cylinders	Installation of several non flammable cylinders	Installation of several non flammable cylinders
Flammable Gas Operation (*)	YES (2 lines with C2H6 and iC4H10)	YES (2 lines with C2H6 and iC4H10)	YES (2 lines with C2H6 and iC4H10)
DESY Table	2	2	2
XSCA Table (**)	2	2	2
Survey (detector alignment)	Yes	Yes	Yes
GOLIATH	NO	?	?

(*) Important to have support night/week-end and reading of pressure on a daily basis – 909 not accessible to users
(**) LAPP table that we used in the past would fit as well with our needs.