



Test Beams 2012, plans and objectives

RD51 mini week
14 June 2012

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on behalf of the
GEM Collaboration (GEMs for CMS)

2012 Test Beam Objectives

- 1) Commissioning of full-size GE1/1 (NS2 technique)
- 2) Validation of new ceramic HV divider (final layout)
- 3) Measurement of timing properties (with/without magnet)
- 4) Measurement of efficiency (with/without magnet)
- 5) Measurement of cluster size/occupancy (with/without magnet)
- 6) Measurement of space resolution function of strip pitch (with/without magnet)
- 7) Electronics studies: VFAT/APV vs TURBO/SRS electronics
- 8) Noise studies with new readout, new hybrids, new zigzag, new ground configurations.
- 9) Commissioning of new VFAT hybrid (for the SRS)
- 10) Gas studies
- 11) Detector imaging/uniformity studies

Period 1 – H2

(may 2012)

SETUP: NS2 prototype (30x30cm²) + RD51tracker + timingGEM

ELECTRONICS: TURBO+VFAT

GAS: Ar/CO₂/CF₄ (45:15:40)

- 1) Commissioning of NS2 (30x30cm²)
- 2) Validation of new ceramic HV divider
- 3) Measurement of timing properties with/without M1 magnet (muons/pions)
- 4) Measurement of efficiency with/without M1 magnet (muons/pions)
- 5) Measurement of cluster size/occupancy with/without M1 magnet (muons/pions)

Period 2 – H4

(June 2012)

SETUP: NS2 prototype (30x30cm²) + RD51tracker + timingGEM + NS2 full-size GE1/1

ELECTRONICS: TURBO+VFAT and SRS + APV

GAS: Ar/CO₂/CF₄ (45:15:40)

- 1) Commissioning of the NS2 full-size GE1/1
- 2) Measurement of timing properties
- 3) Measurement of efficiency
- 4) Measurement of cluster size/occupancy
- 5) Measurement of space resolution function of strip pitch.
- 6) Measurement of space resolution function of strip pitch(muons/pions)

SETUP: NS2 prototype (30x30cm²) + RD51tracker + timingGEM + 3*NS2 full-size GE1/1

ELECTRONICS: TURBO+VFAT and SRS + APV

GAS: Ar/CO₂/CF₄ (45:15:40)

- 1) Commissioning of the 3 * NS2 full-size GE1/1
- 2) Measurement of timing properties in the GOLIATH magnet
- 3) Measurement of efficiency in the GOLIATH magnet
- 4) Measurement of cluster size/occupancy in the GOLIATH magnet
- 5) Measurement of space resolution function of strip pitch in the GOLIATH magnet.
- 6) Measurement of space resolution function of strip pitch(muons/pions) in the GOLIATH magnet



Period 4 – H4

(October 2012)



SETUP: NS2 prototype (30x30cm²) + RD51tracker + timingGEM + 3*NS2 full-size GE1/1

ELECTRONICS: TURBO+VFAT and SRS + APV

GAS: Ar/CO₂/CF₄ (45:15:40)

- 1) Electronics studies: adoption of SRS using VFAT and APV electronics