F.O.R. S.C.I.E.N.C.E.

Fast Observatory of Radiation, or
Stellar Coincidence Inclination Experiment, measuring Non-neutral (i.e. Charged) Events

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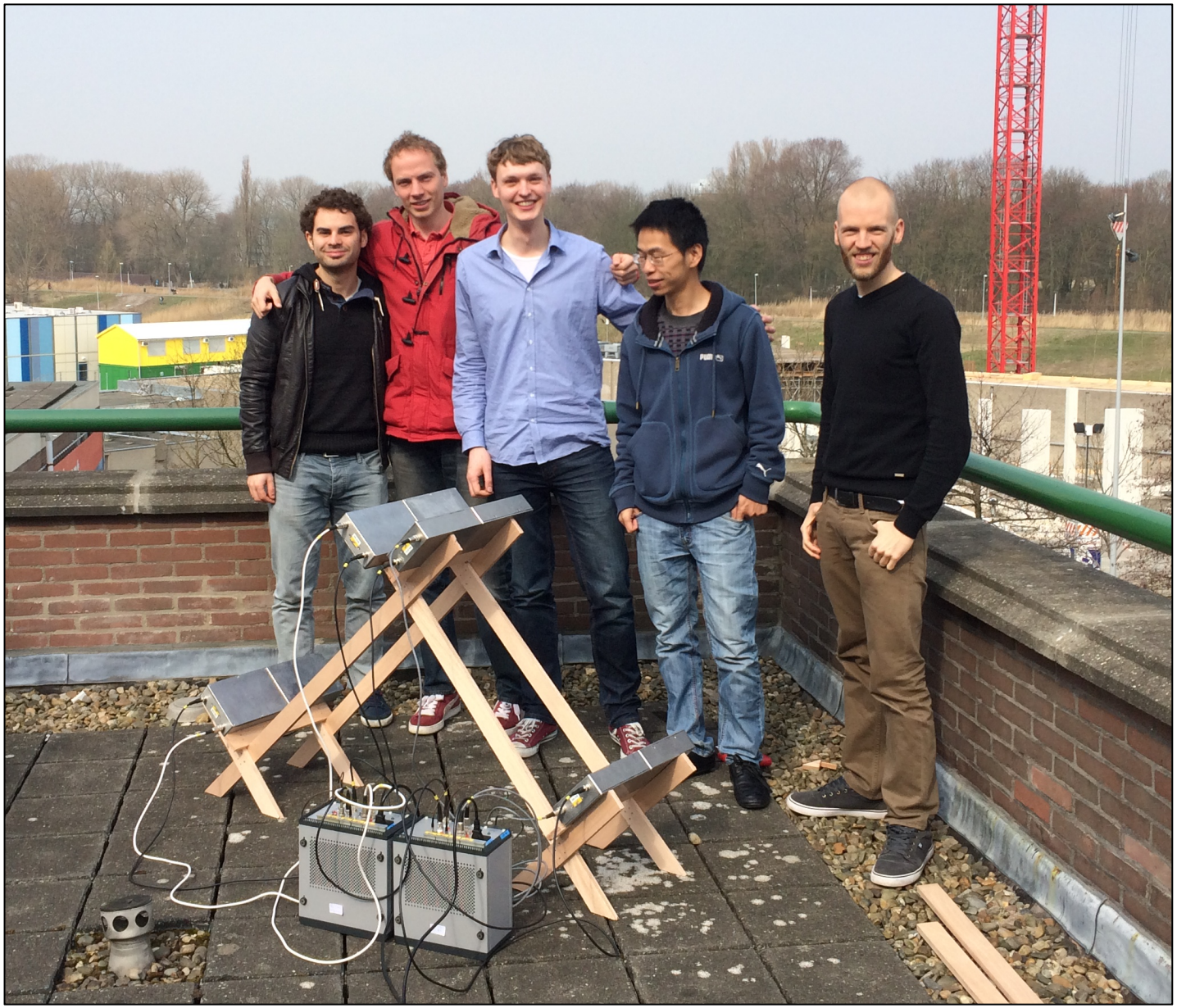
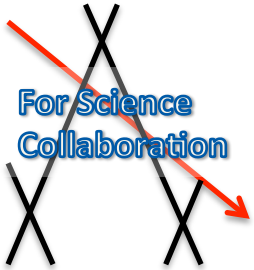


For Science
Collaboration

Setup



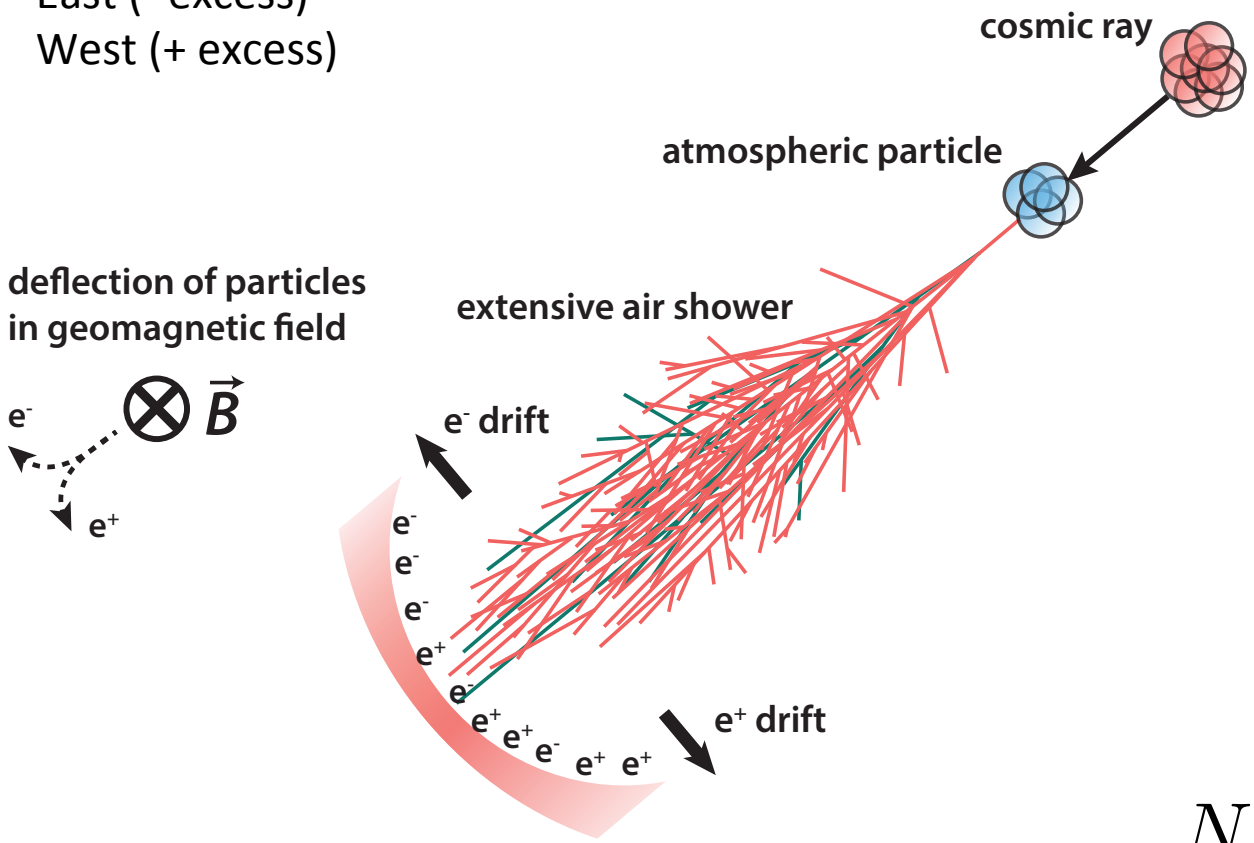
- Angles: 45 deg.
- Distance between coincidental scintillators: 70 cm
  → Opening angle (Zenith): 22.6 deg.
  → Opening angle (Azimuth): 34.9 deg.
  → Sky coverage: 3.8%

- Calibration (PMTs, Thresholds)
  - Tuned thresholds / HV
  - Single Scintillator: ~10 Hz
  - Coincidence (on top): ~3 Hz

- Run 1 and run 2 data now unblinded

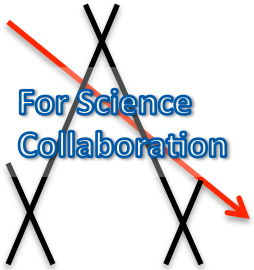
Results

- East (- excess)
- West (+ excess)



$$A_{\text{meas}} = \frac{Nwest - Neast}{Nwest + Neast}$$

Results

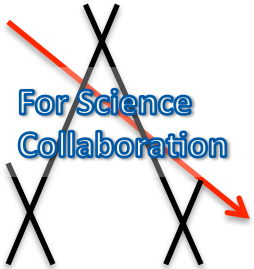


$$A_{\mathrm{meas}} = \frac{Nwest - Neast}{Nwest + Neast}$$

Assume uniform input

$$A_{\mathrm{meas}} = A_{\mathrm{det}} + A_{\mathrm{Cosmic}}$$

Results

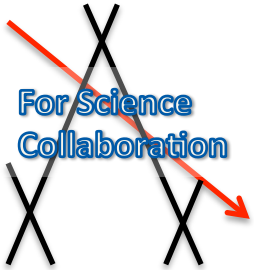


$$A_{\text{meas}} = \frac{Nwest - Neast}{Nwest + Neast}$$

Assume uniform input

$$A_{\text{meas}} = \cancel{A_{\text{Asst}}} + A_{\text{Cosmic}}$$

Results



<u>Run 1:</u>

2h 45m

- West: 550 +- 23 counts
- East: 530 +- 23 counts

Reversed: (1h 03m)

- West = 172 +- 13
- East = 200 +- 14

<u>Run 2:</u>

1h 51m

- East: 343 +- 19
- West: 370 +- 19

Reversed: (2h 45m)

- East: 580 +- 24
- West: 475 +- 22

- Poissonian errors
- Corrected for 180 deg. Efficiency difference
- Error propagation

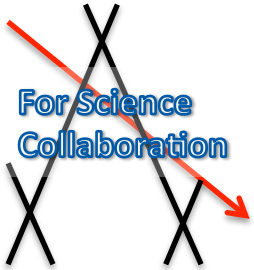
$$A_{\text{meas}} = \frac{Nwest - Neast}{Nwest + Neast}$$

Run1 :
A = (-2.6 +- 2.9)%
(.89 sigma)

Run2 :
A = (-3.1 +- 2.4)%
(1.26 sigma)

Combined:
A = -(2.8 +- 1.9)%
(1.49 sigma)

Interpretation



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We expect - (east) excess:
A < 0

<u>We find:</u>
P-value of 0.136
(no significant excess of -)

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Thanks for your attention!