

Topical Lecture Mar 2015

TOP

EXPERIMENT

Group 1

Maarten Jelle Matteo Robert

25/03/2015

Topical Lecture Mar 2015

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EXPERIMENT

Day 2

Group 1

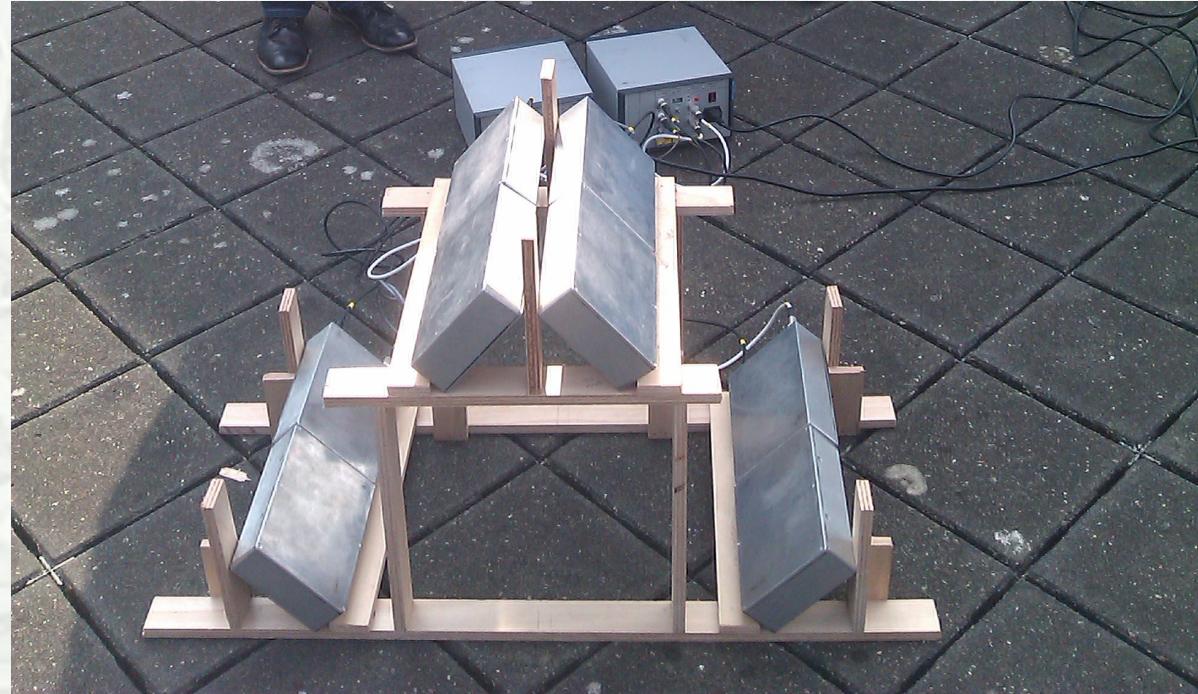
Maarten Jelle Matteo Robert

25/03/2015

Research question:

- Can we get rich/famous within 24h?
- Nobel?
- Selling art?
- Secondary question:
 - Do we see a charge asymmetry in cosmic rays?

Our setup (there are many like it, but this is ours)



- Plans for dismantling
 - Budget 1'000'000'000 n\$
 - Unique design → repurposed as art/table
 - Auction starts at 1.00 n\$

Data:

We combined measurements from the two days

- Systematic errors are removed turning the experiment
- Different timings corrected for scaling down

Final data combination:

$W \rightarrow E$	$E \rightarrow W$
2042	2142

The asymmetry value is

**$2.4\% \pm 1.5\%$ (stat.) excess for shower-particles from the East
wrt West**

Results:

$2.4\% \pm 1.5\%$ (stat.) excess for shower-particles from the East wrt West

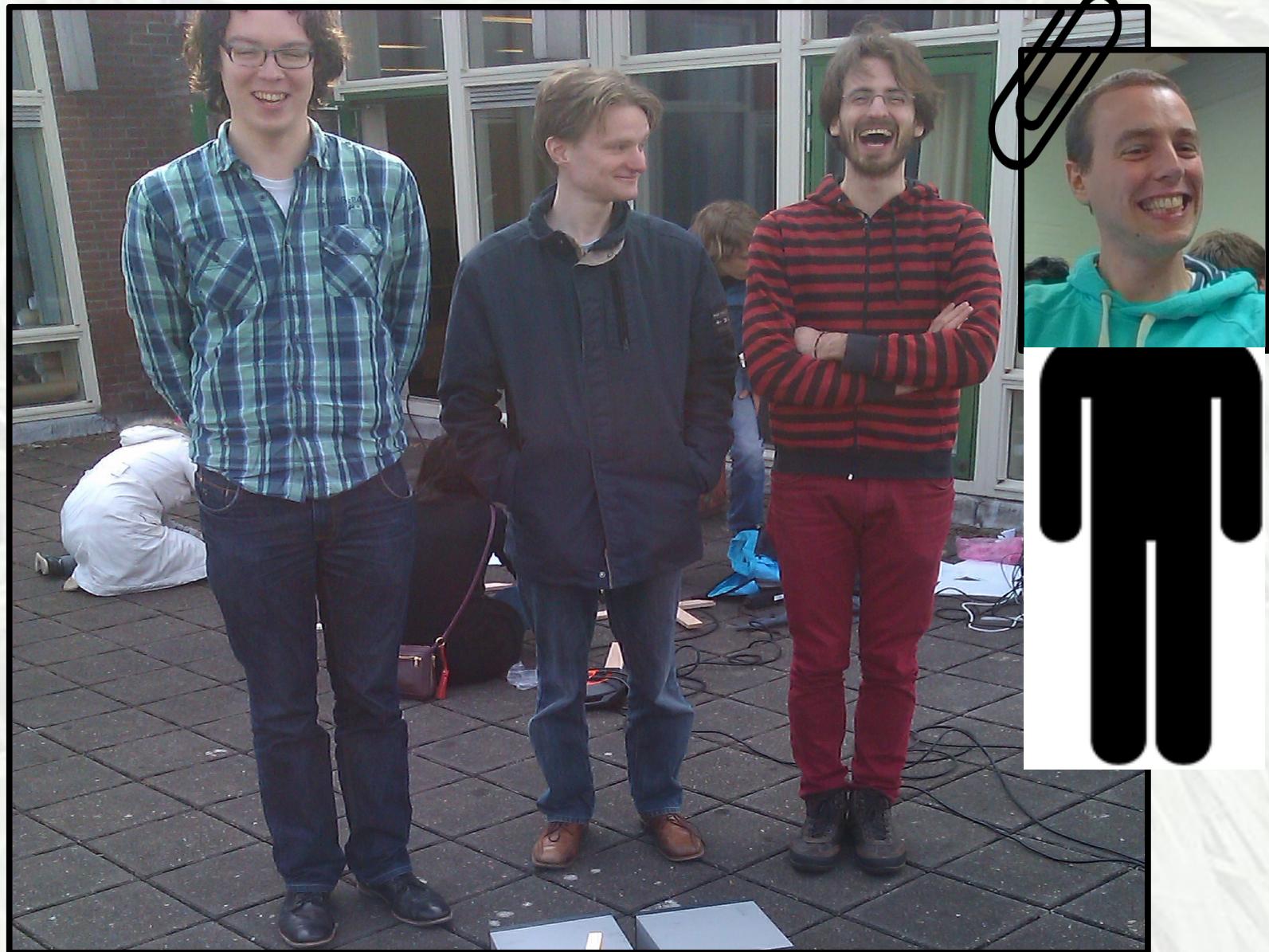
An excess E-W is found with 1.5σ significance.

We set limits with 2σ and 5σ confidence.

Exclusion Limits

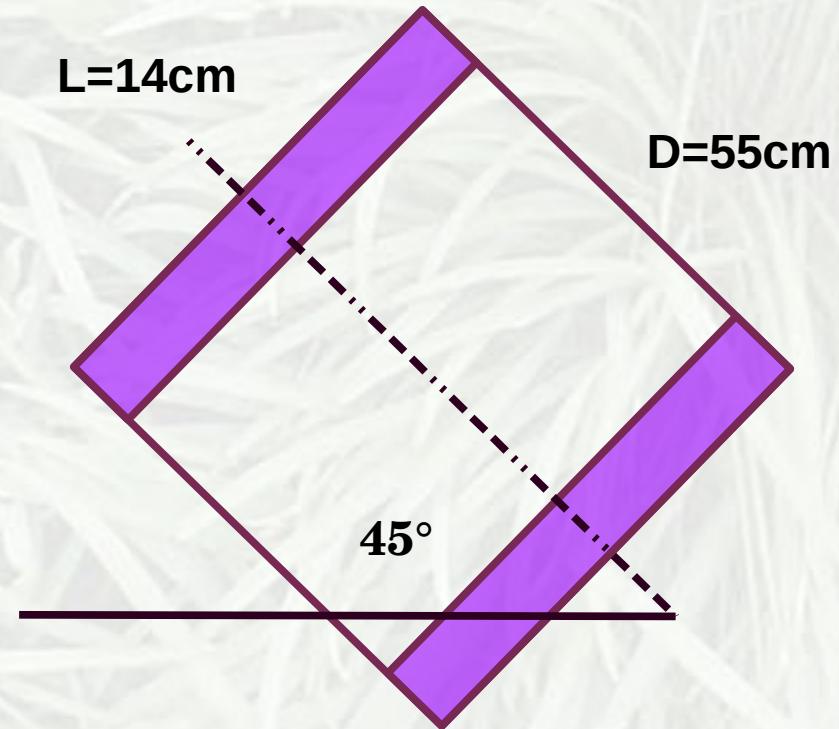
2σ $-0.7\% < A < +5.5\%$

5σ $-5.3\% < A < +10.1\%$



Backup

		W-e	E-w	Run time (min)	
	Day 1				
	or.1 scaled	408.5	408.5	165	
	or.2	379	438	70	
	or.1	964	964		
	Day 2				Tot.events
	or.A	828	922	150	1750
	or.B	651	624	116	1275
	scal or.A	603.25	671.74		1275
		TOTAL (scaled)			Sigma
		2041.75	2142.24		64.68
		Asymmetry	SIGMA		significance
		0.024	0.015		1.55
Exclusion		0.0549	-0.0069	2	
limits		0.1013	-0.053	5	



- Acceptance: $\alpha (L - D \cdot \tan \delta)$
- δ is the deviation from 45°
- drops to 0 at $\pm 15^\circ$

Results!!!!!!!!!!!!!! ...after
only one afternoon!!!!

Total amount of counts 2745

E->W W->E

Or.1 964 964

Or.1(res) 408.5 408.5

Or.2 438 379

Difference (rescaled): 59 ± 40