

Kalibrierung der Auger-Fluoreszenzteleskope mit einer UV-Punktlichtquelle

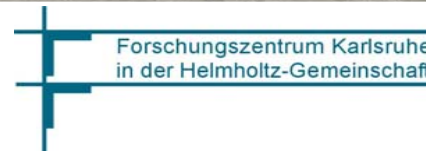
Julia Parrisius

Schule für Astroteilchenphysik 2008

Obertrubach-Bärnfels



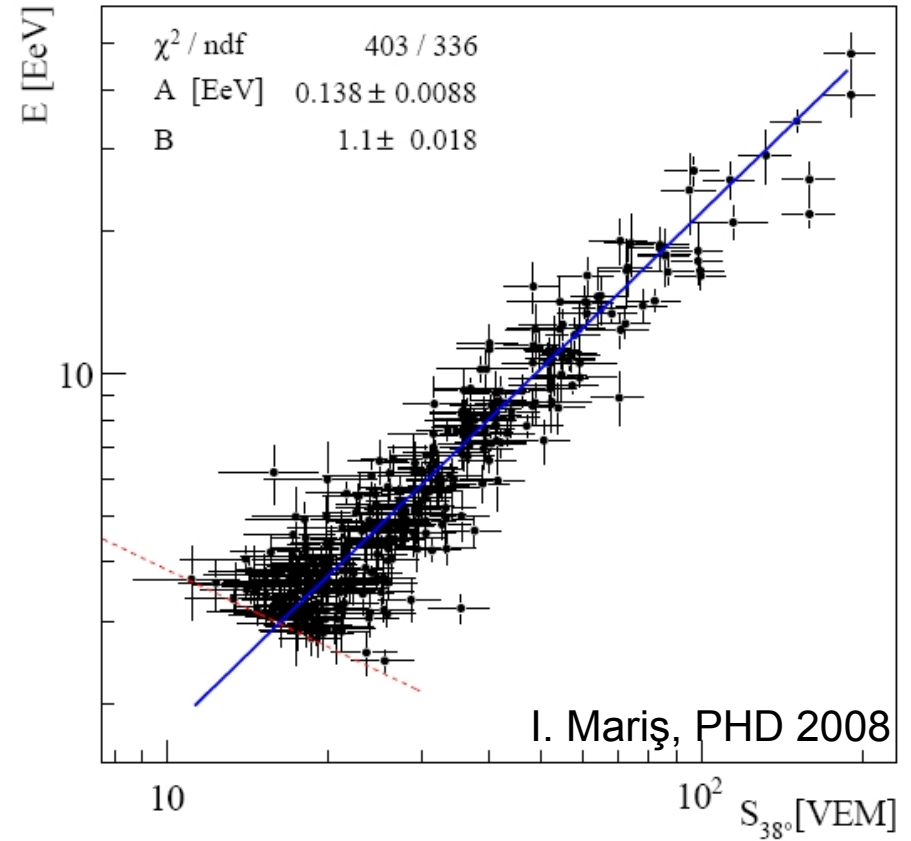
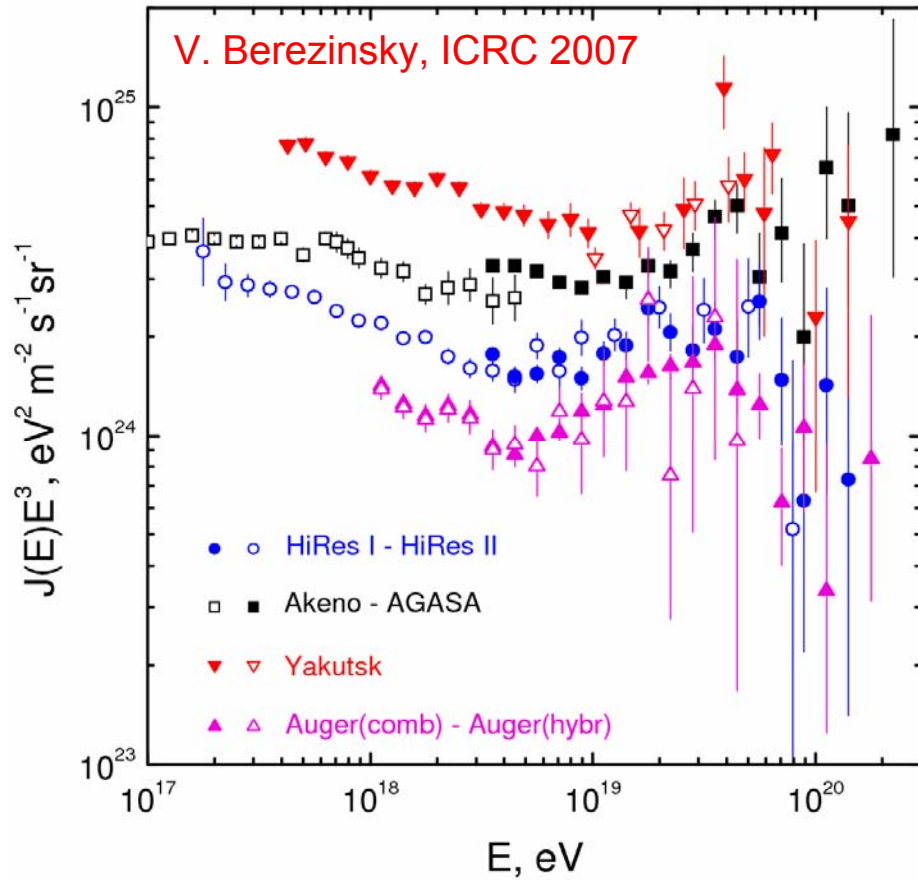
Universität Karlsruhe (TH)
Forschungsuniversität • gegründet 1825



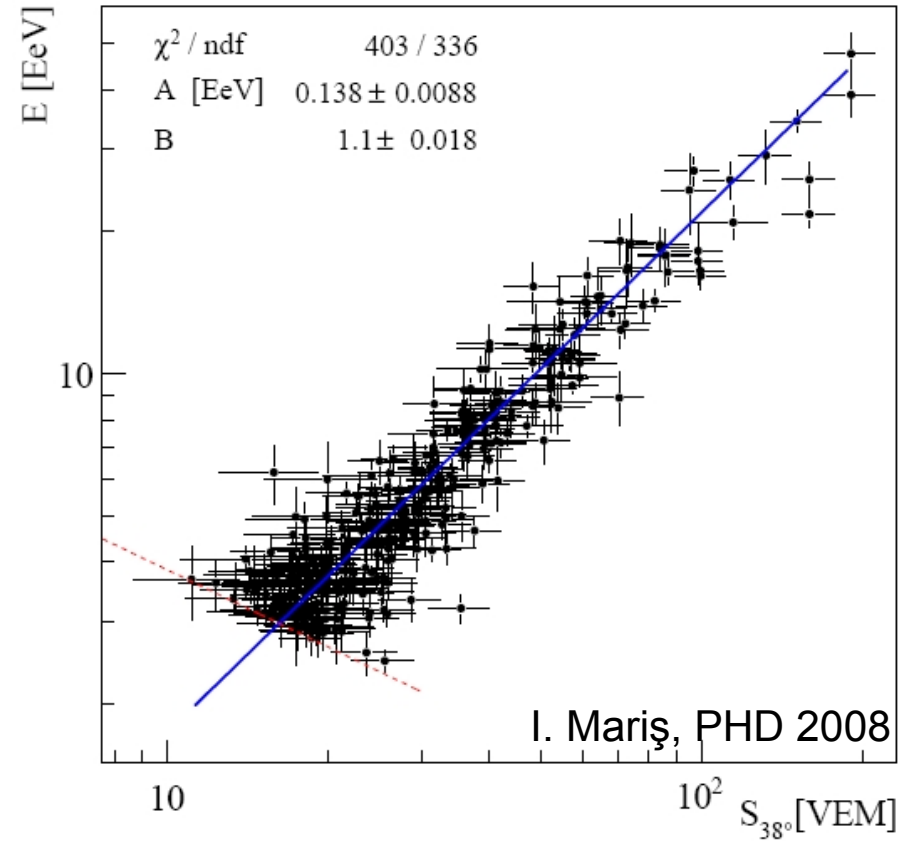
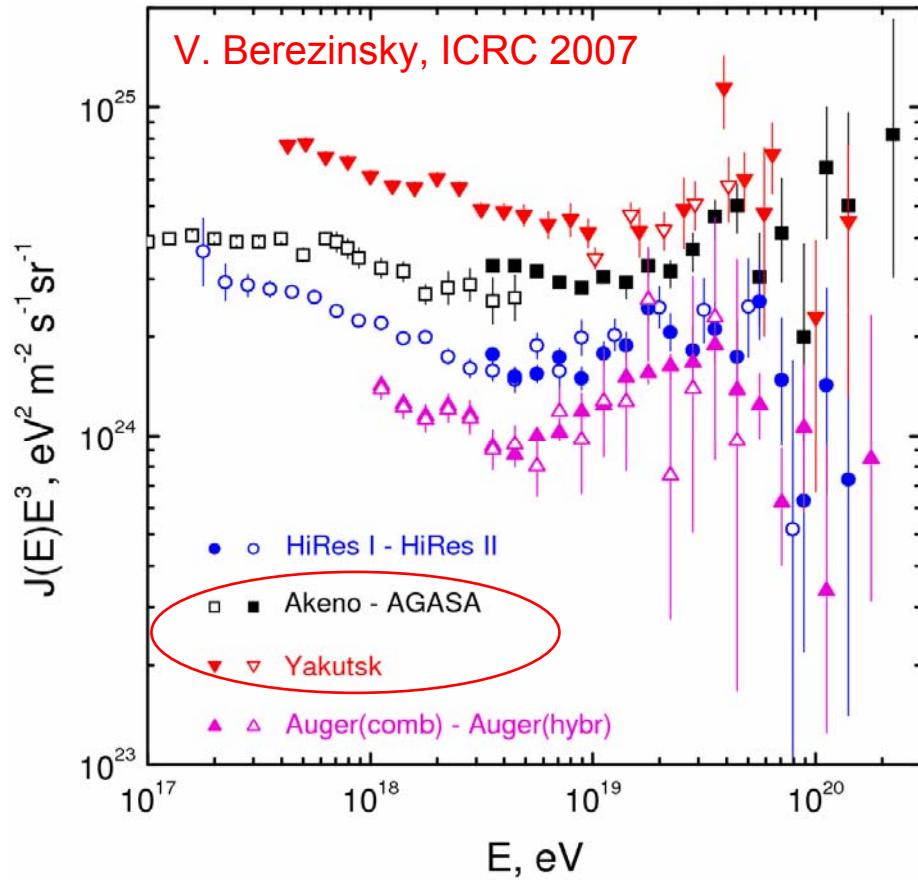
Forschungszentrum Karlsruhe
in der Helmholtz-Gemeinschaft



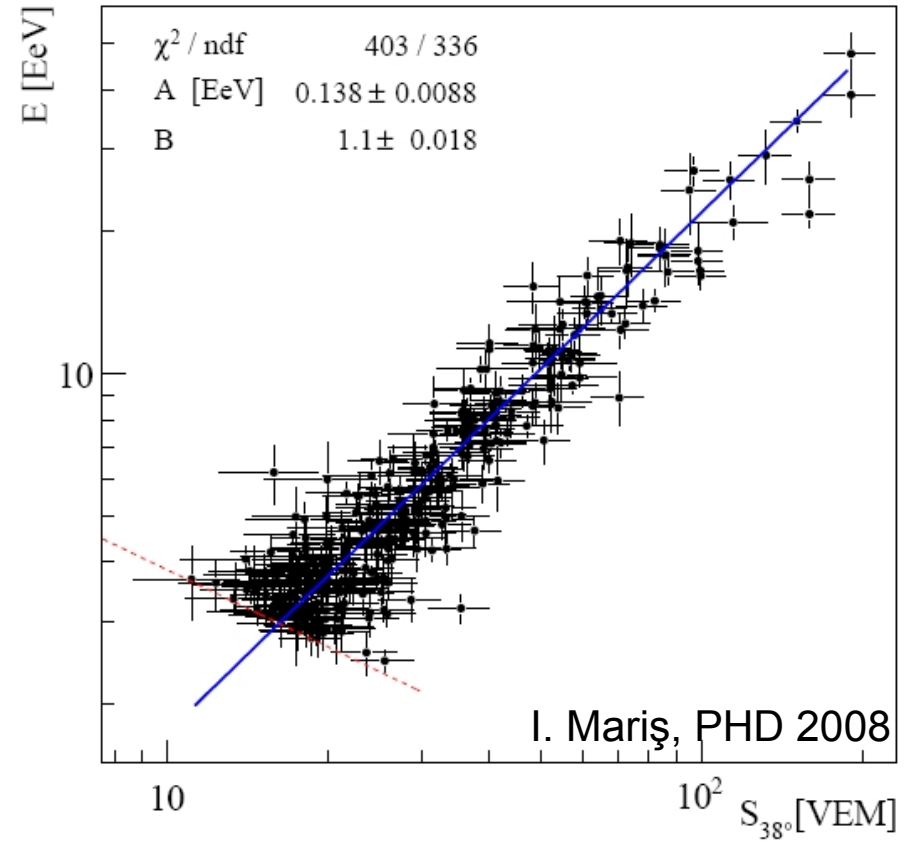
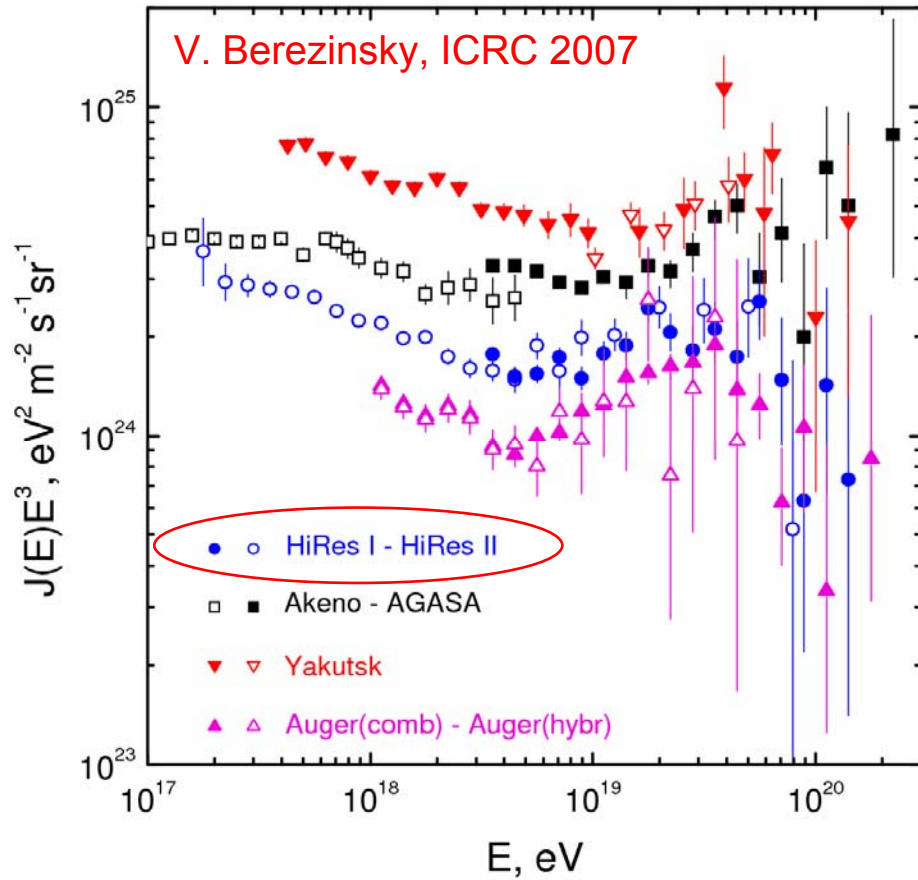
Motivation: Energieskala



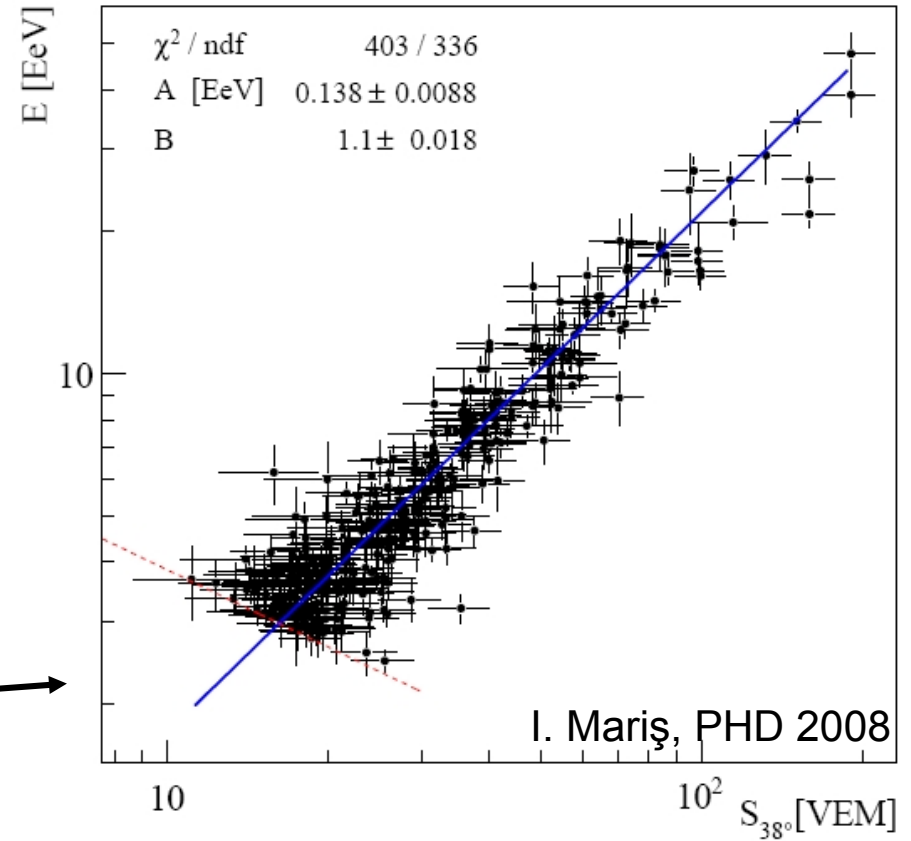
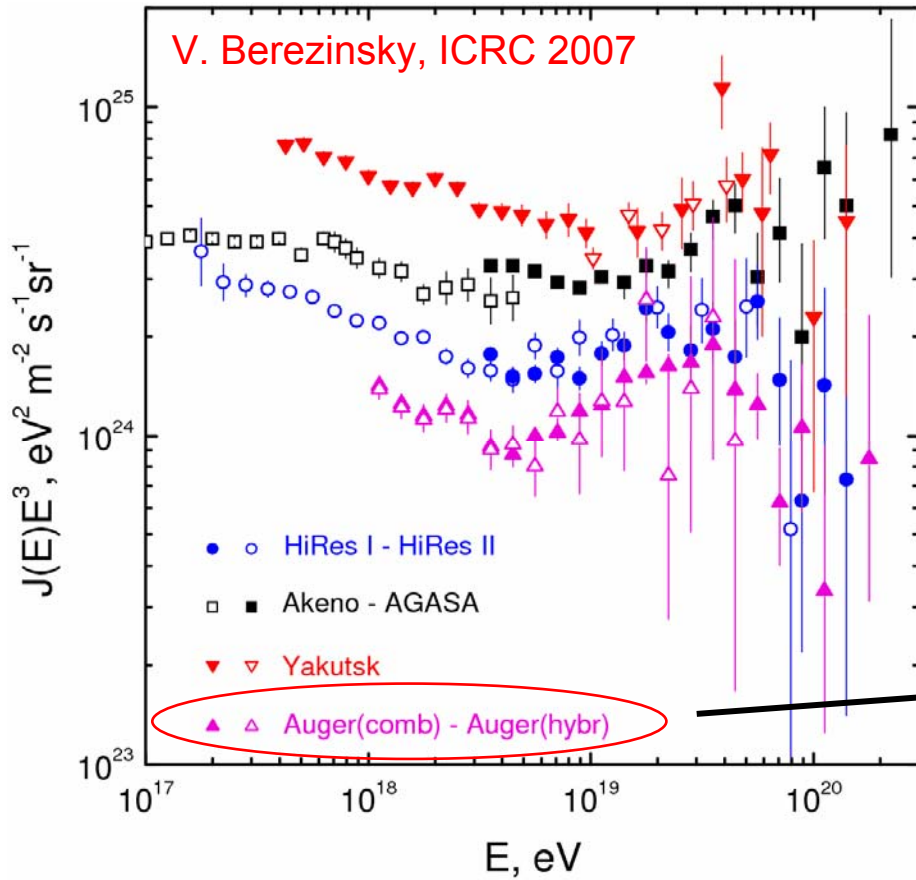
Motivation: Energieskala



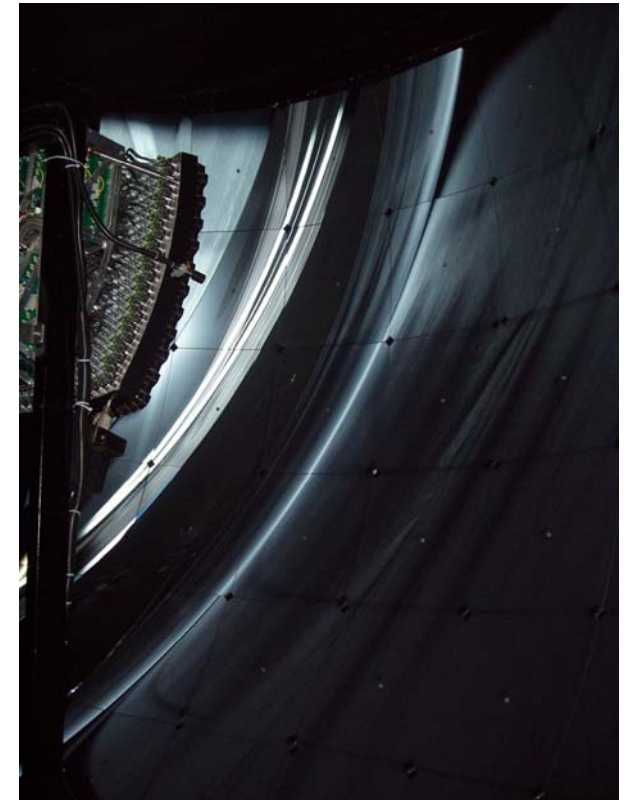
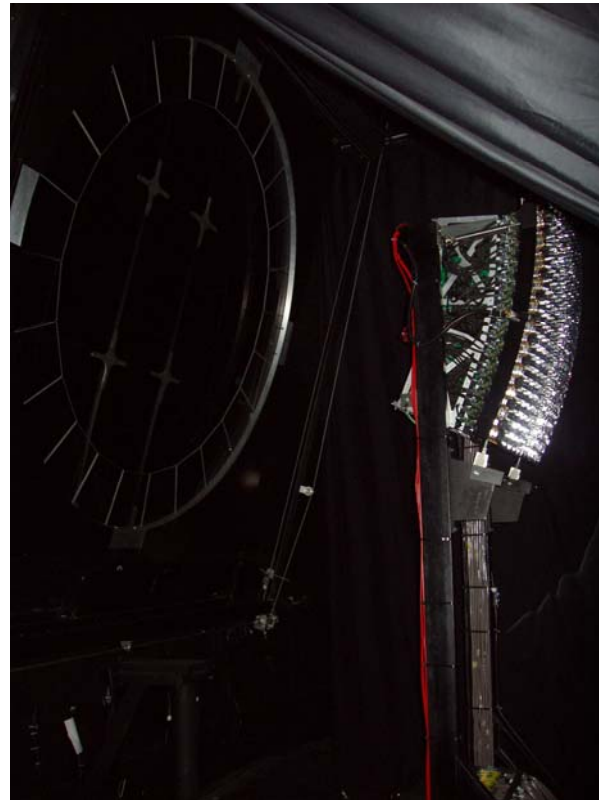
Motivation: Energieskala



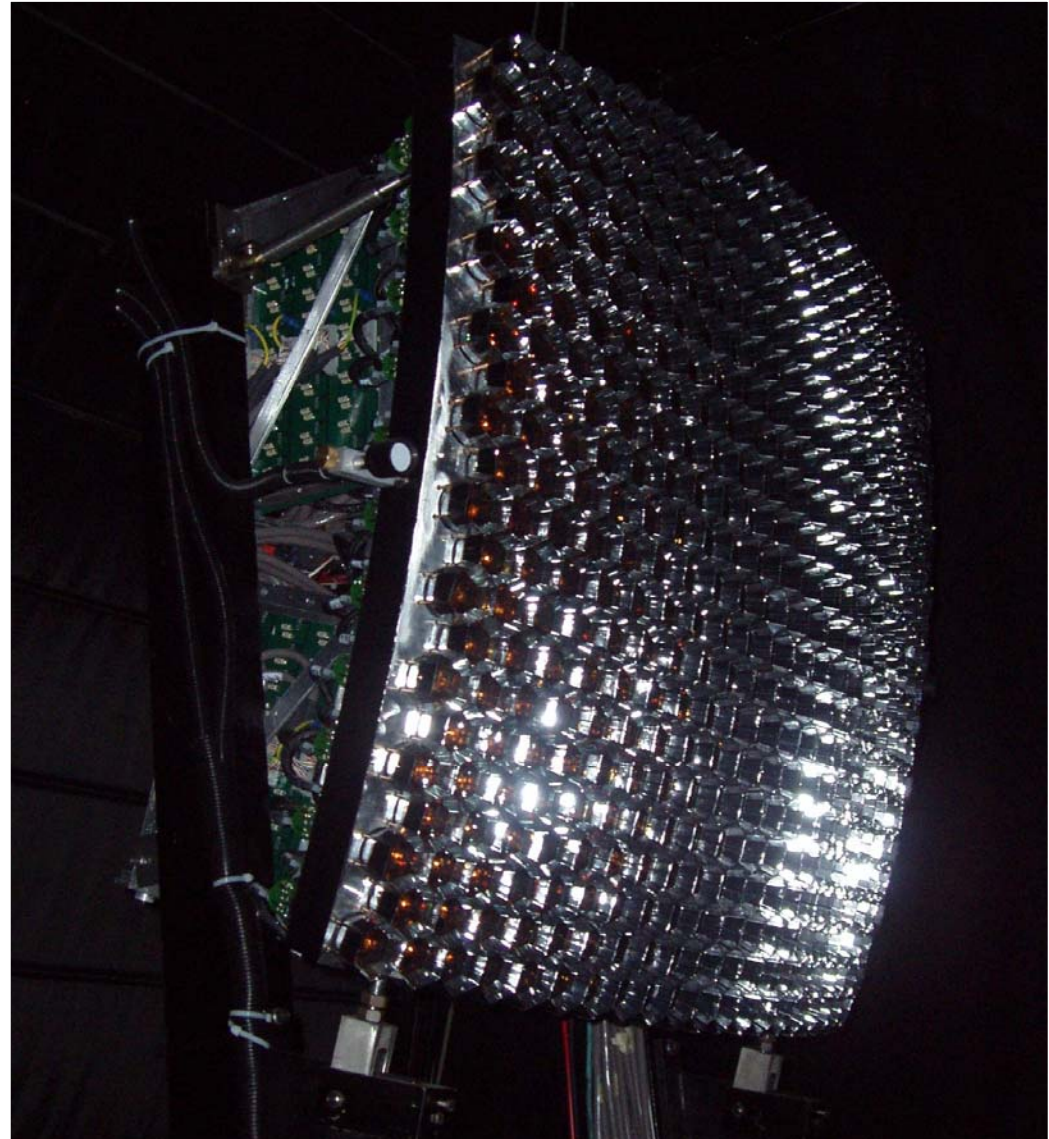
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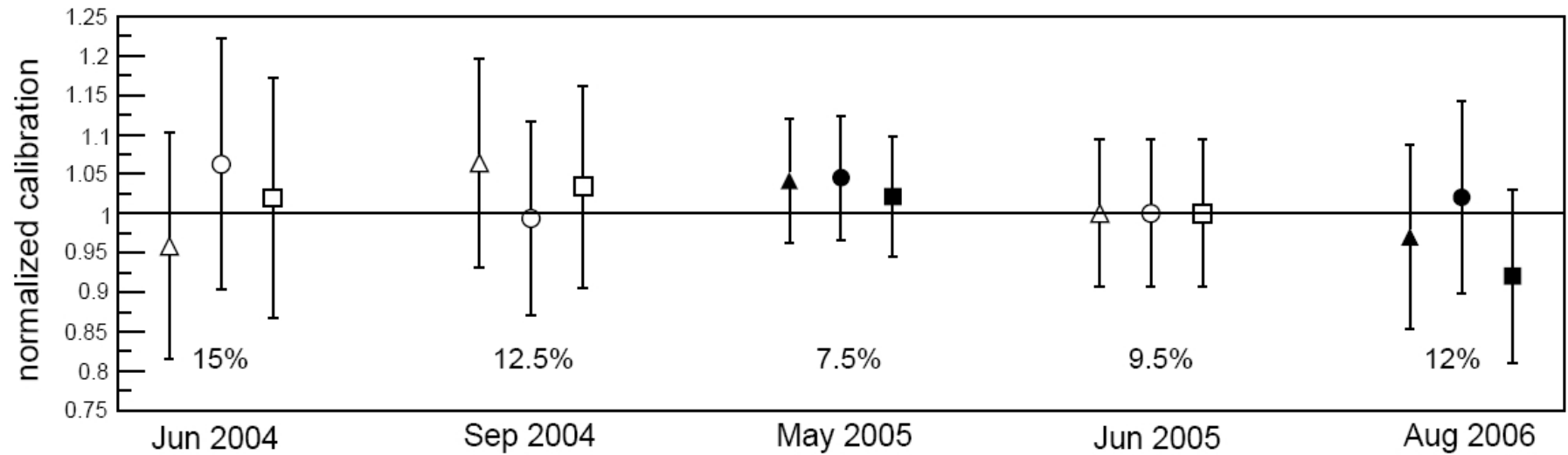
Auger: Fluoreszenzteleskope



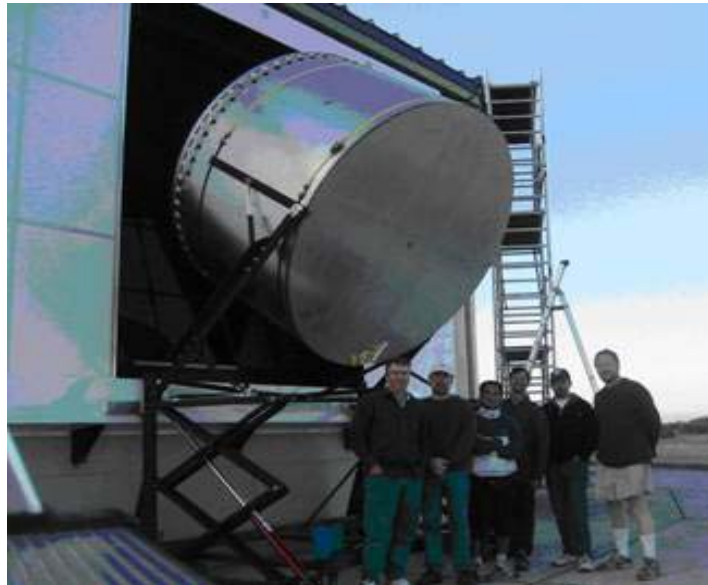
Auger: Fluoreszenzteleskope



Kalibrierung

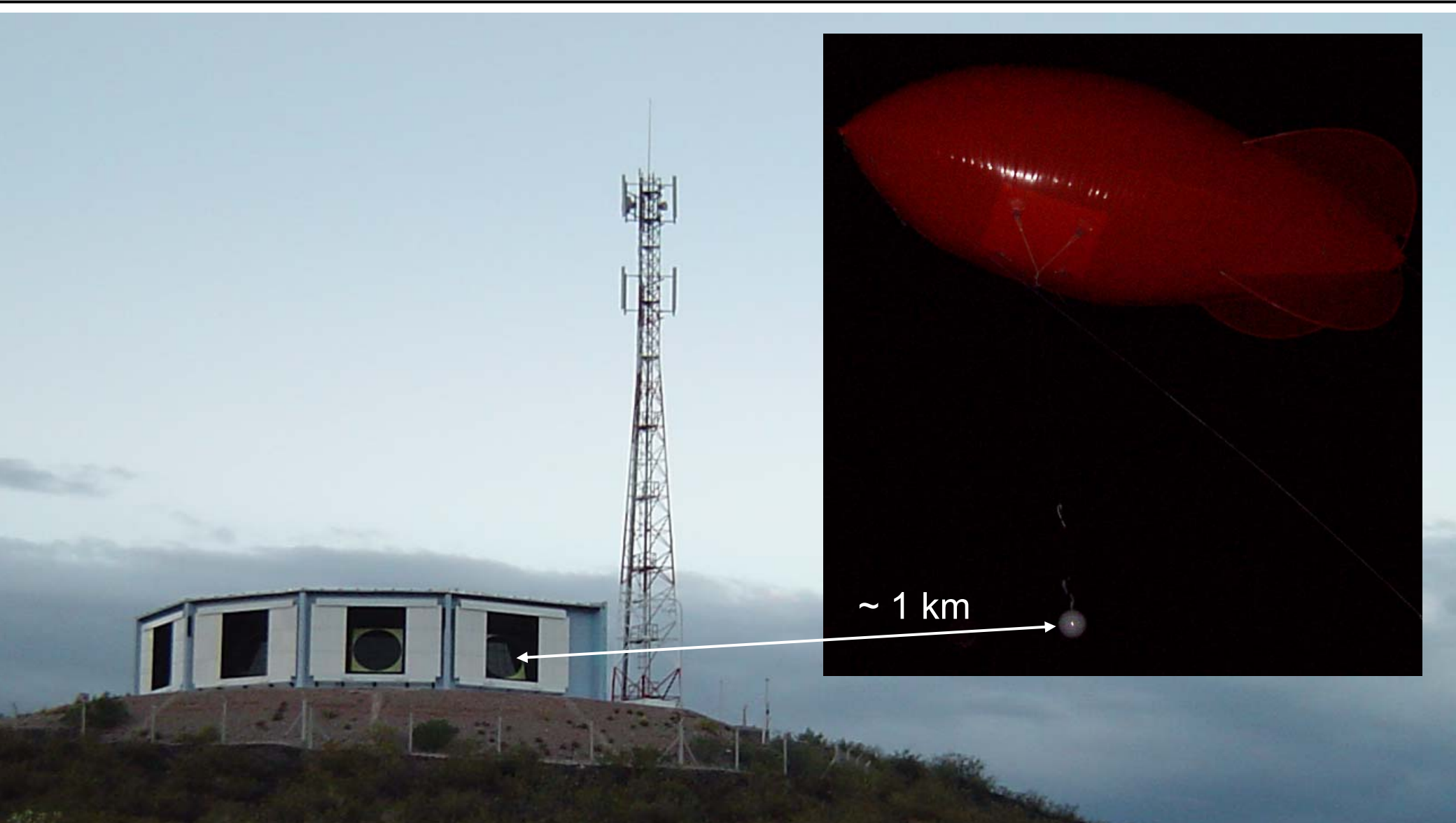


Drum



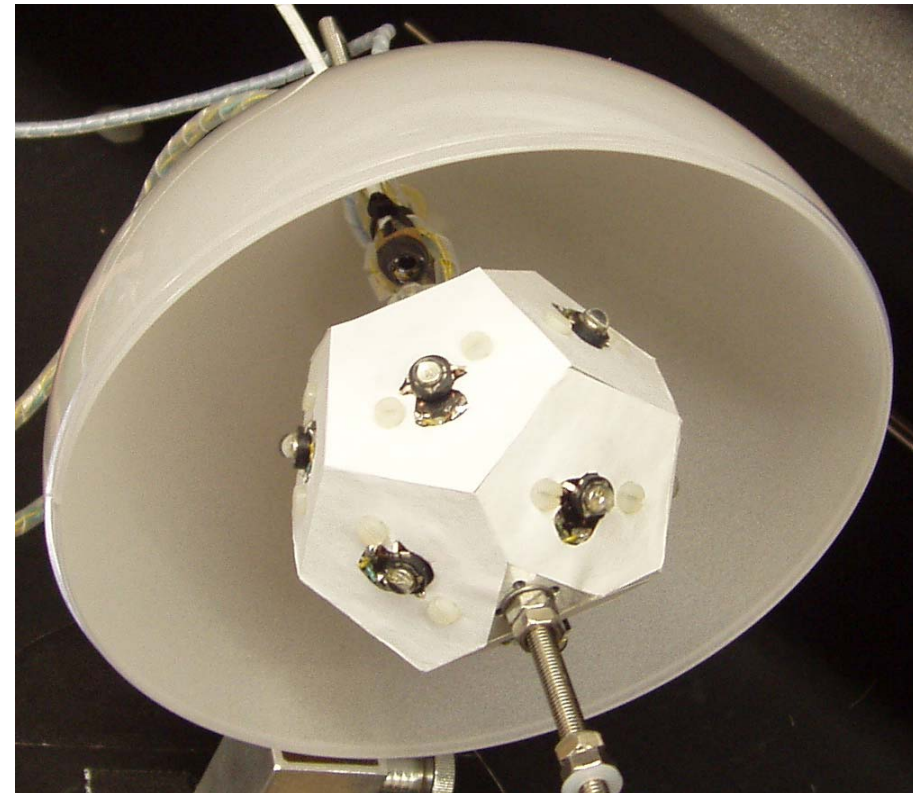
Roving
Laser

Messmethode



Lichtquelle – Beschreibung

- 12 LEDs, mittlere Wellenlänge ~ 375 nm
- Tyvek® und sandgestrahltes Plastik als Diffusor
- 4 Helligkeitsstufen
100%, 50%, 25%, 10%
- mögliche Pulslängen
 $4\mu\text{s}$, $8\mu\text{s}$, $32\mu\text{s}$

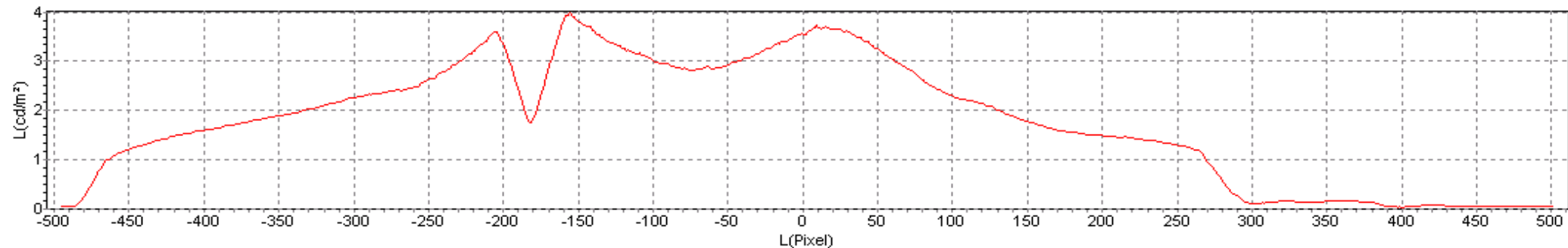
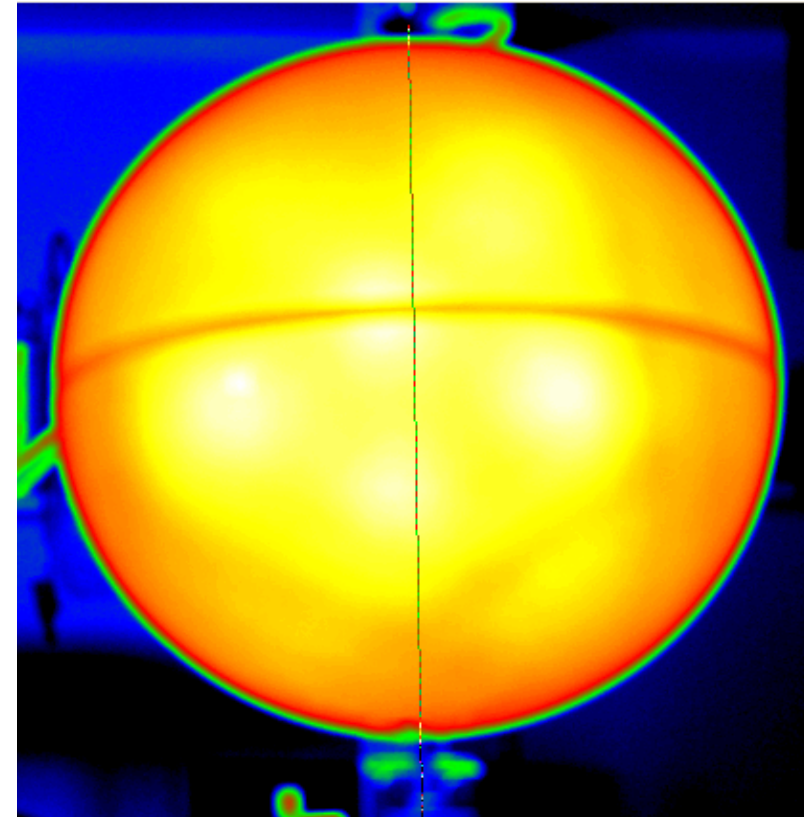


Lichtquelle – Kalibrierung

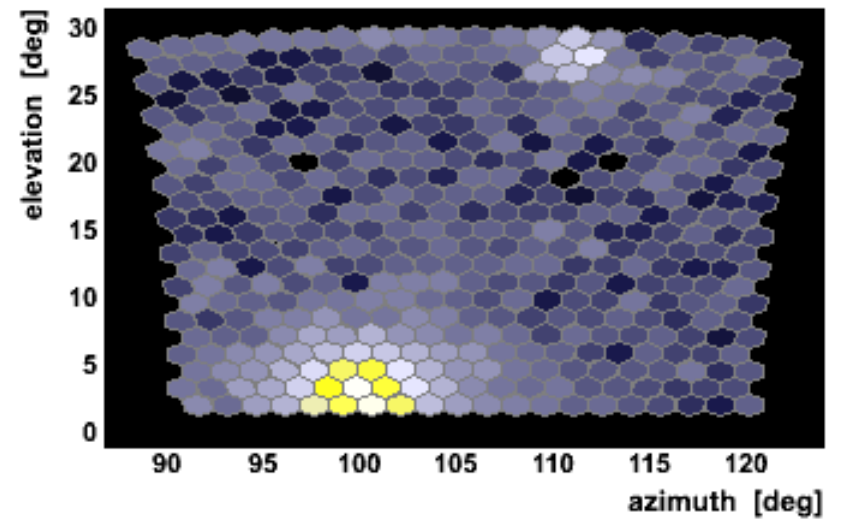
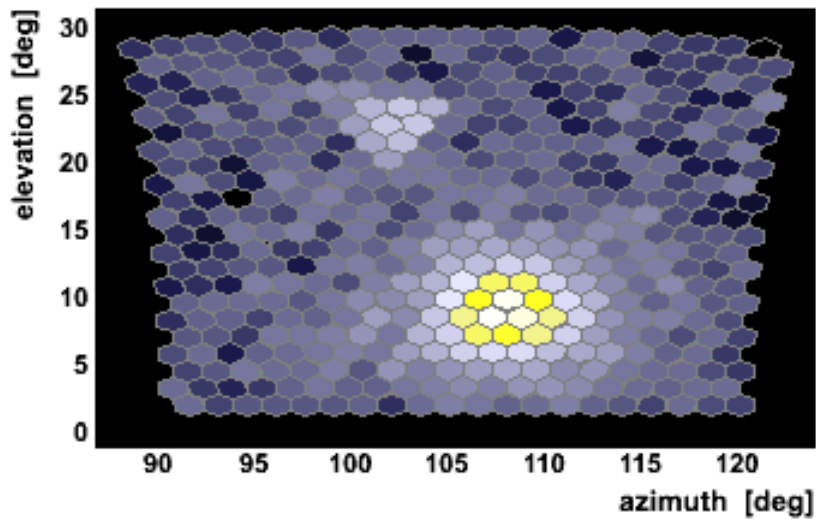
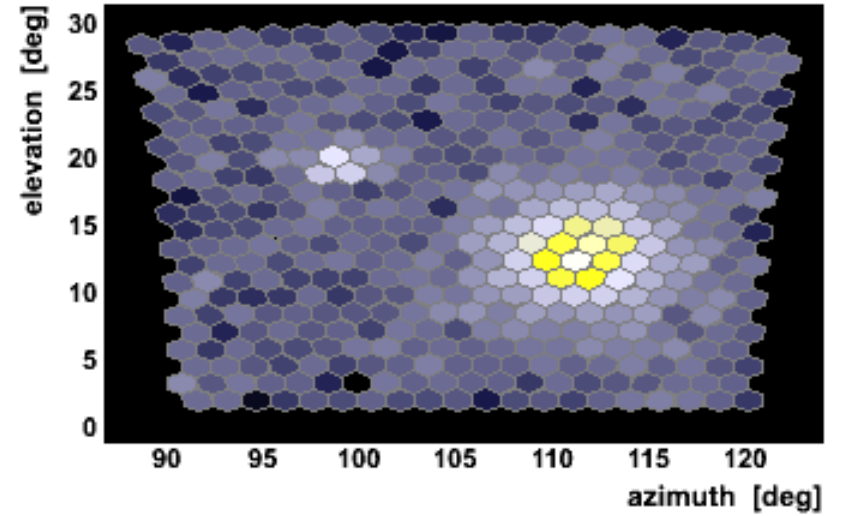
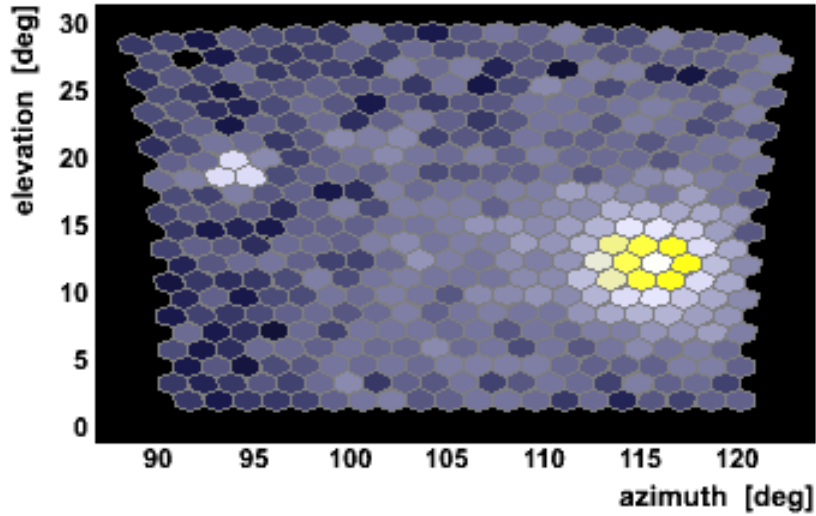
$$I = (1.504 \pm 0.033) \text{ W @ } 24^\circ\text{C}$$

Temperaturabhängigkeit:

$$\sim 0.2 \text{ \%/}^\circ\text{C}$$



Messung



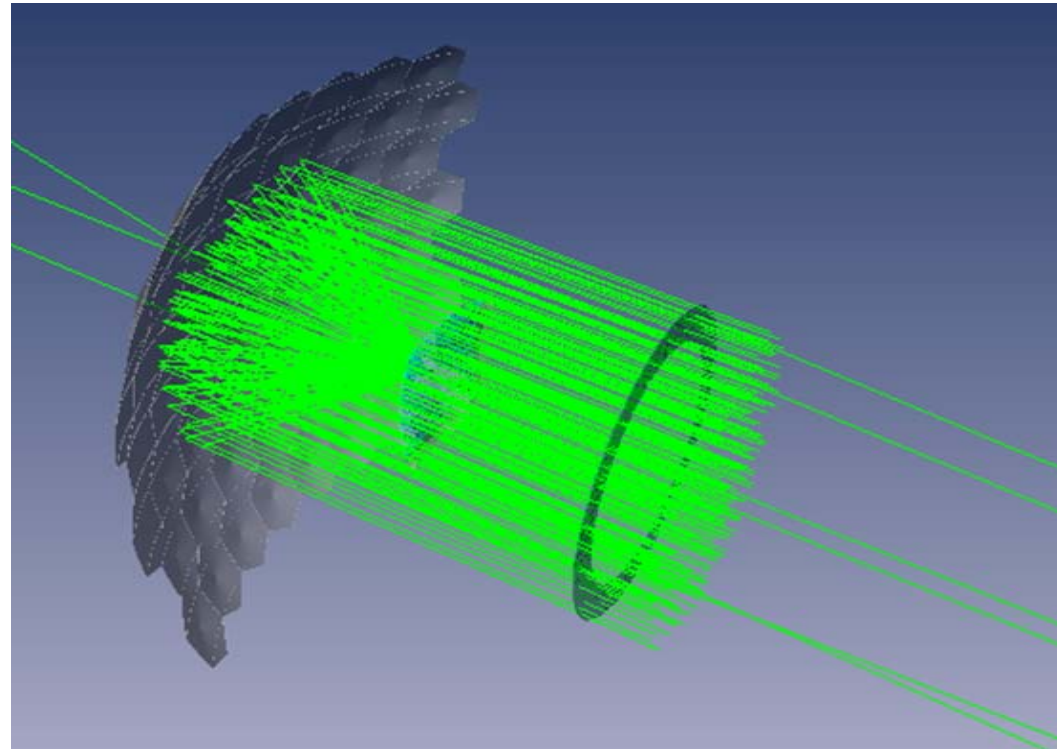
Nächste Schritte

Simulationen mit Geant4 TelescopeSimulatorLX

(von Assis, Gonçalves, Tomé)

→ Erklärung für die Effekte
finden

→ Kalibrationskonstante
bestimmen



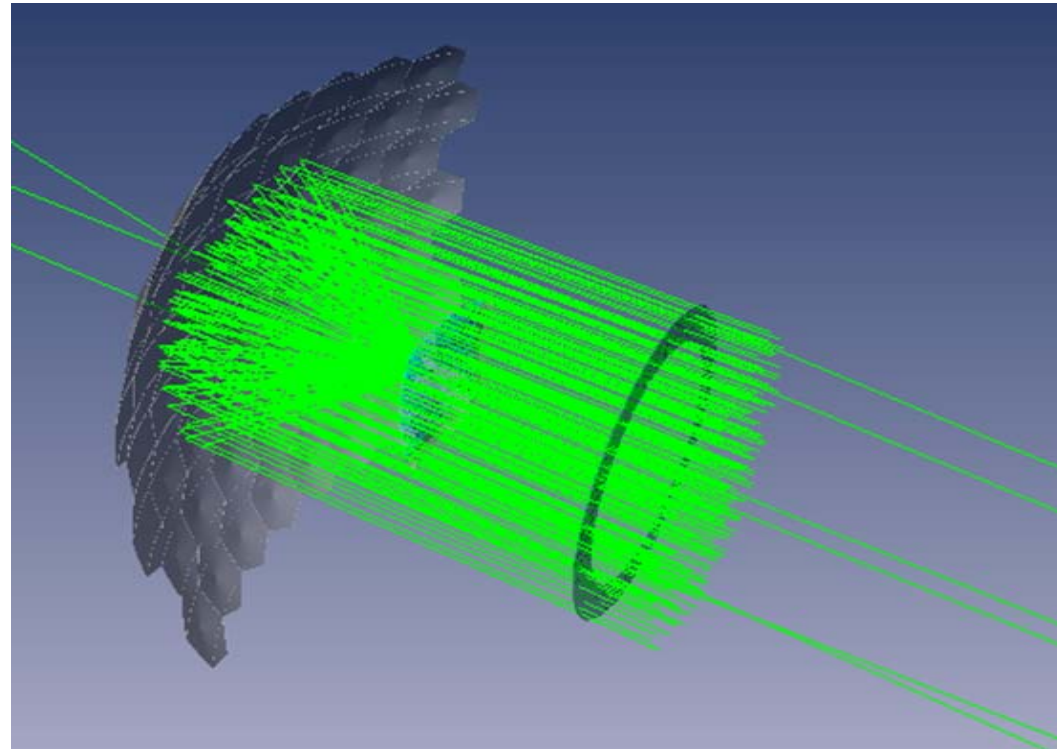
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Vielen Dank!

Fragen?



Spektrum

