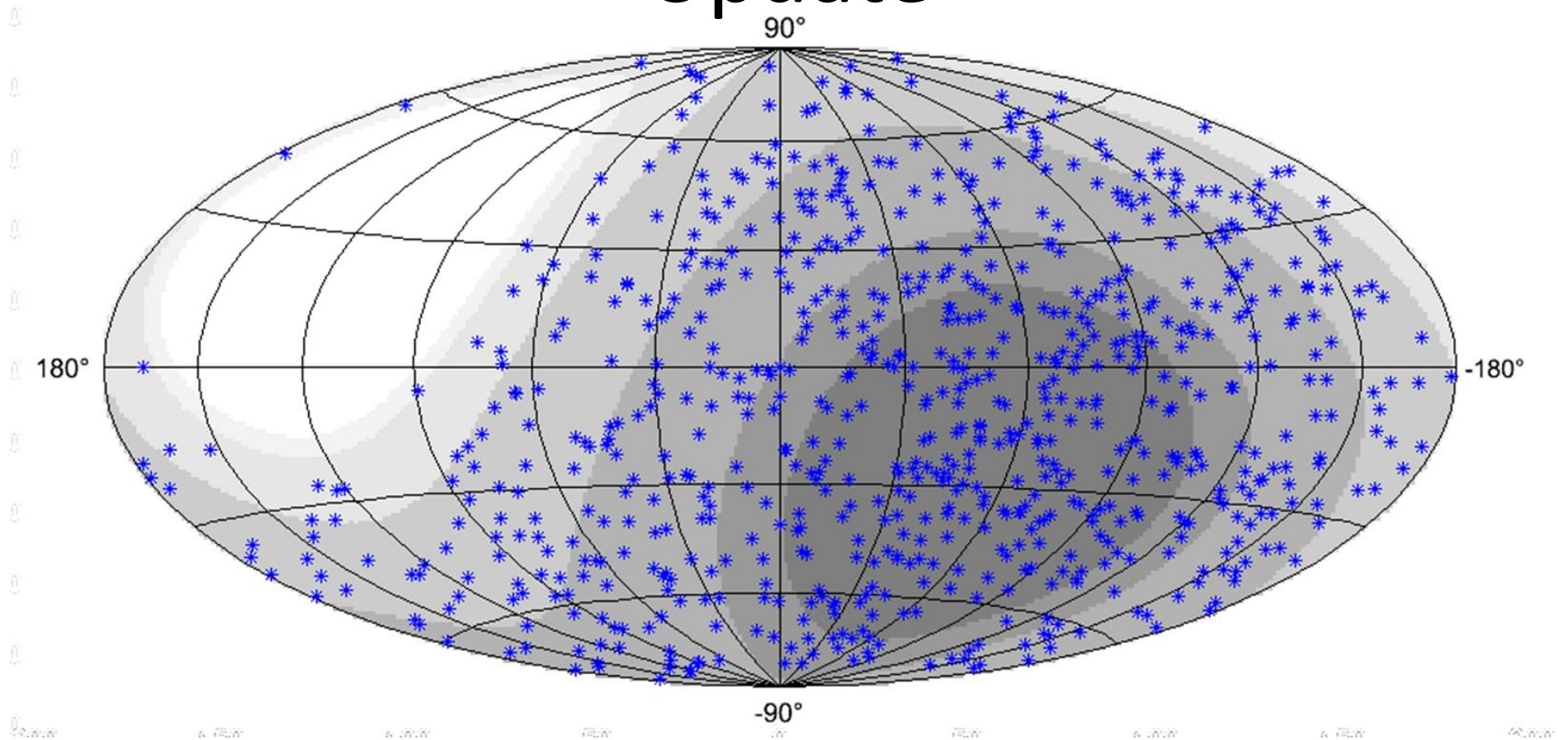


Cosmic Accelerators

Update



J. Adam Moody

11/05/09

Overview

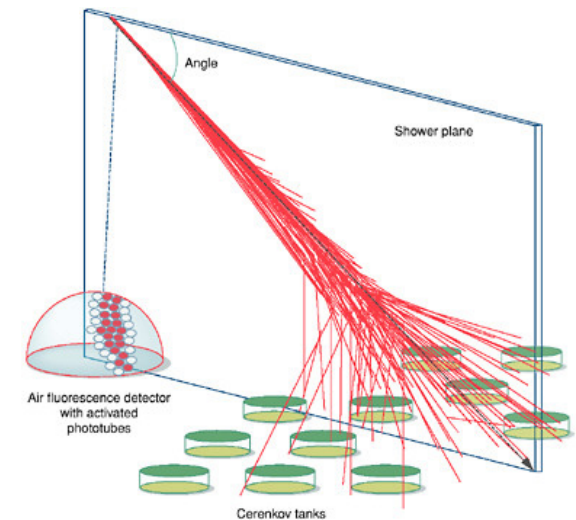
- Up to 2003
- “New” data
 - Analysis and conclusions
- Future work

Summary

- What is source of UHECRs?
- Possibility of non GZK suppressed particles?
- Considered sources
 - AGN
 - Supernovae
 - Pulsars, etc
- Experimental
 - Auger, HiRes, AGASA
 - Ground, Air

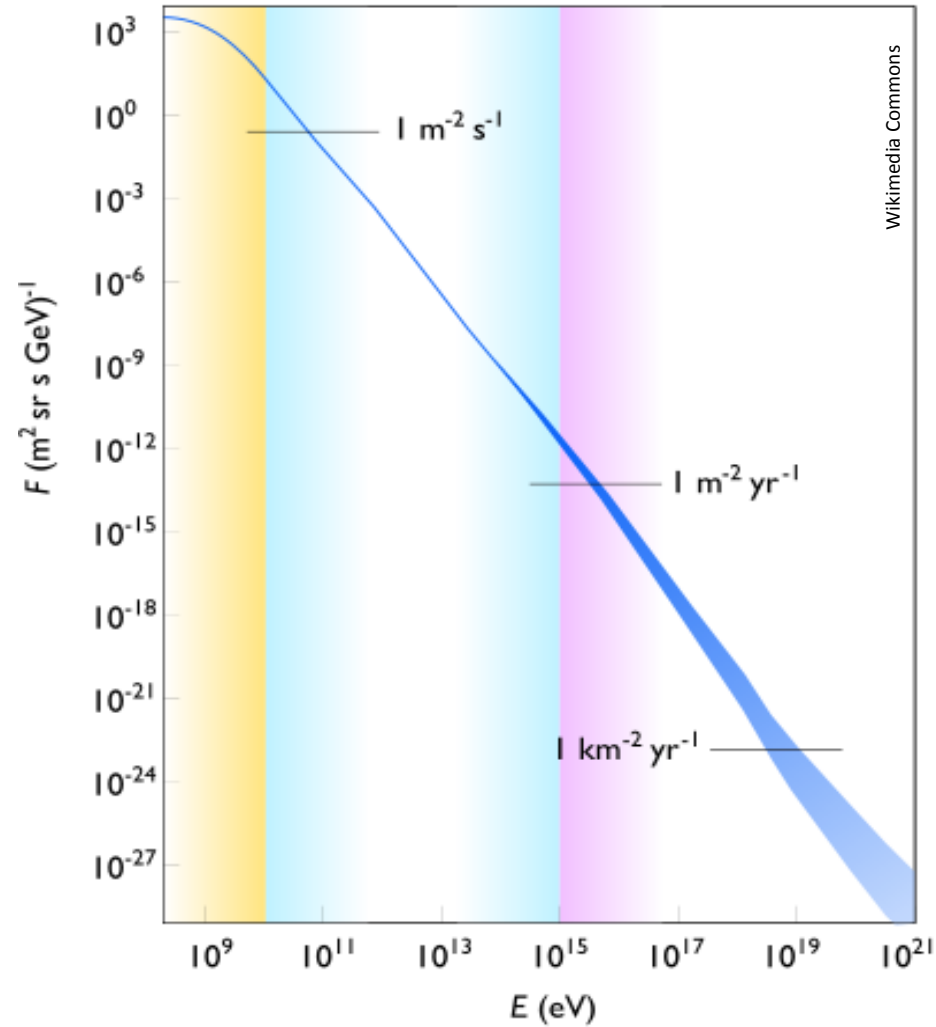
New Data

- Majority of new data: Auger
- ~55 new events $> 50 \times 10^{20}$ eV (50 Eev)
- Preliminary Auger analysis indicated correlation



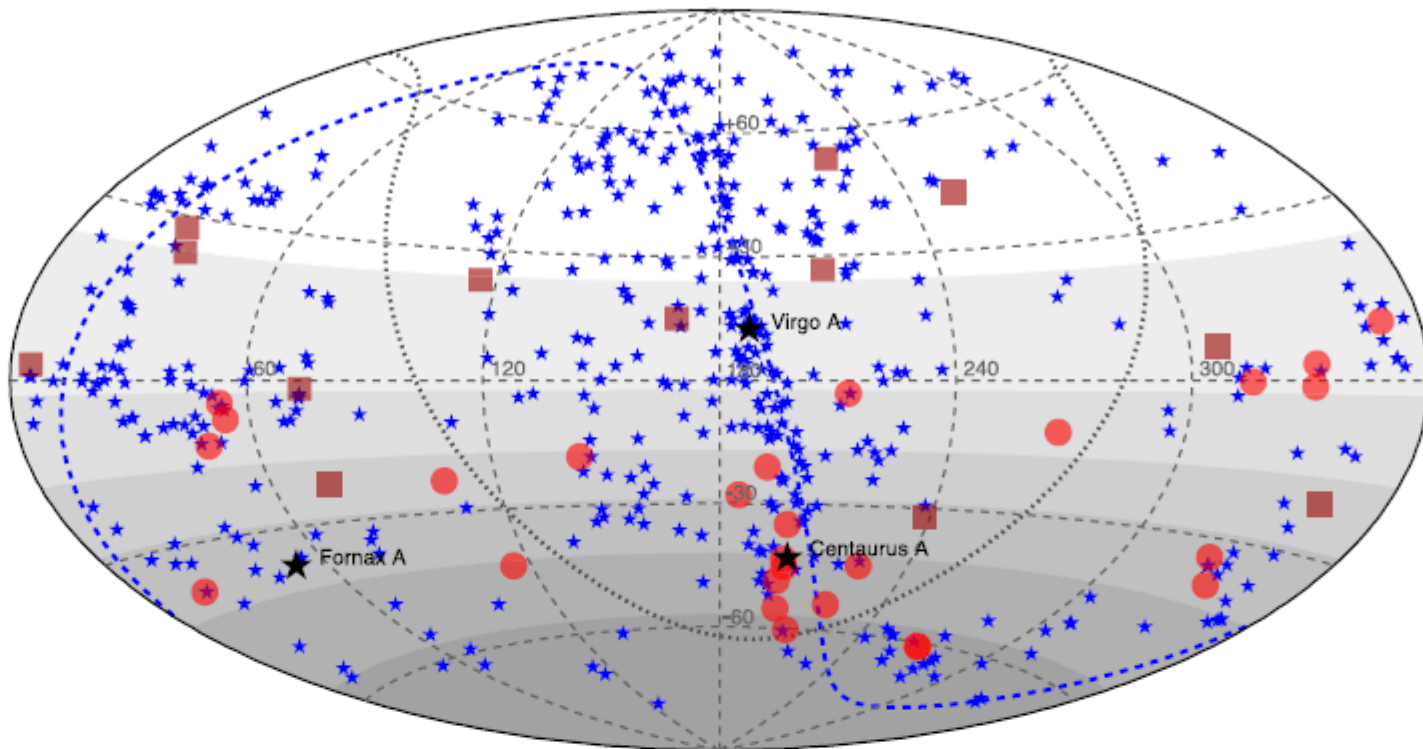
Pierre Auger Observatory, Argentina

Reminder / New points



Map of observed UHECRs

J. Blümer et al. / Progress in Particle and Nuclear Physics 63 (2009) 293–338



- Correlation may exist between large scale matter structures...but not definitive

Continuing analysis

- Comparison & integration with different data sets
 - AGASA
 - Auger Period I & II
 - Different periods of operation
 - HiRes
 - Others



Current viewpoint

- Correlation with matter distribution in local neighborhood (cosmologically)
- AGN correlation not confirmed, but remains possibility

Possible sources?

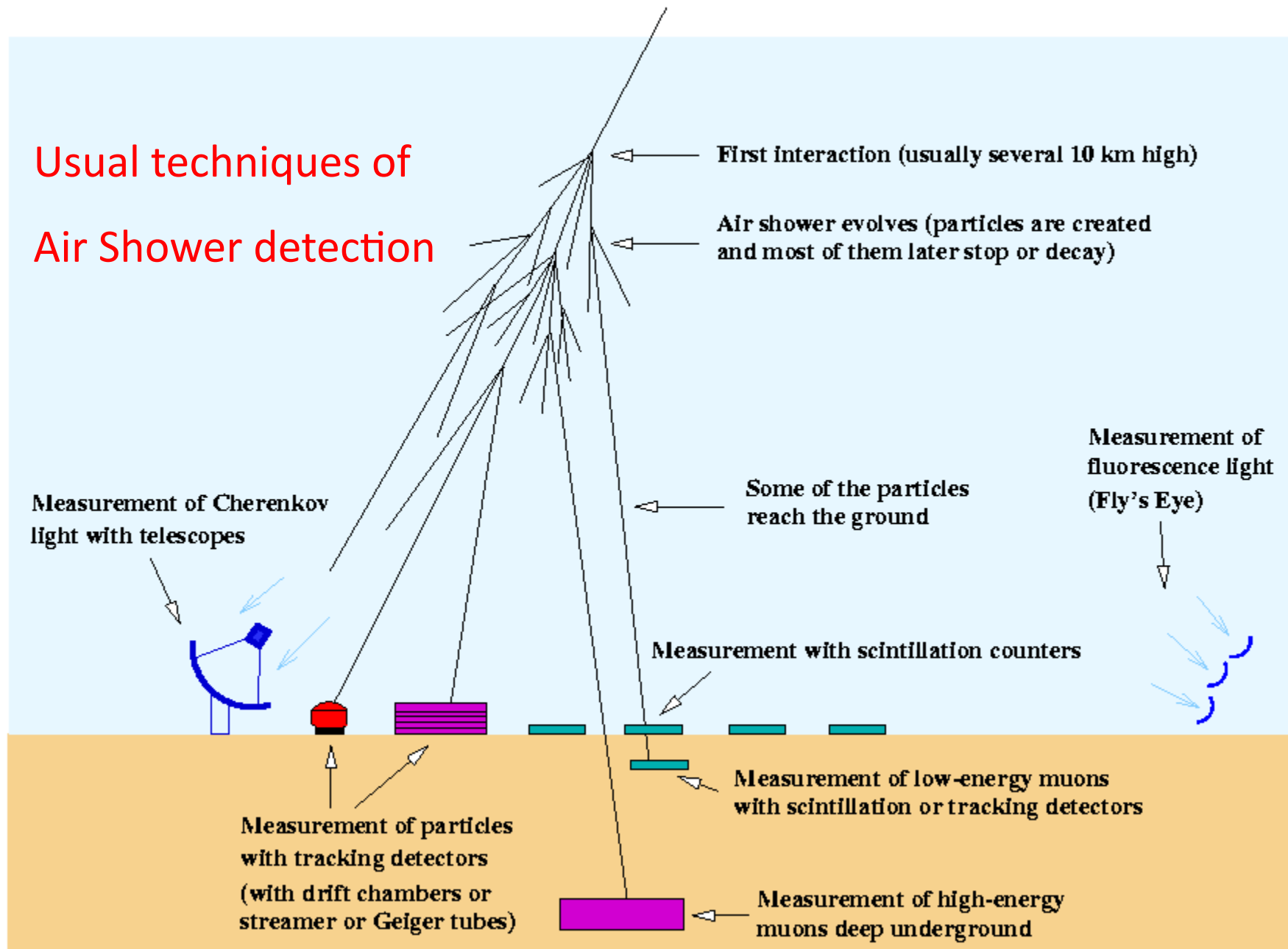
- AGN
- Radio Galaxies
- Cosmic rays passing by SNRs?
- Exotic matter decay (cryptons, dark matter decay)?

Future experimental work

- Auger North
 - Larger data set will allow for more statistical certainty; scarcity of data still a concern.
 - “Local” distribution of matter different as viewed in northern hemisphere
- Radio
- Space

Questions?

Usual techniques of Air Shower detection



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