Astrophysical interpretations

of the data measured at the Pierre Auger Observatory

Teresa Bister for the Pierre Auger Collaboration

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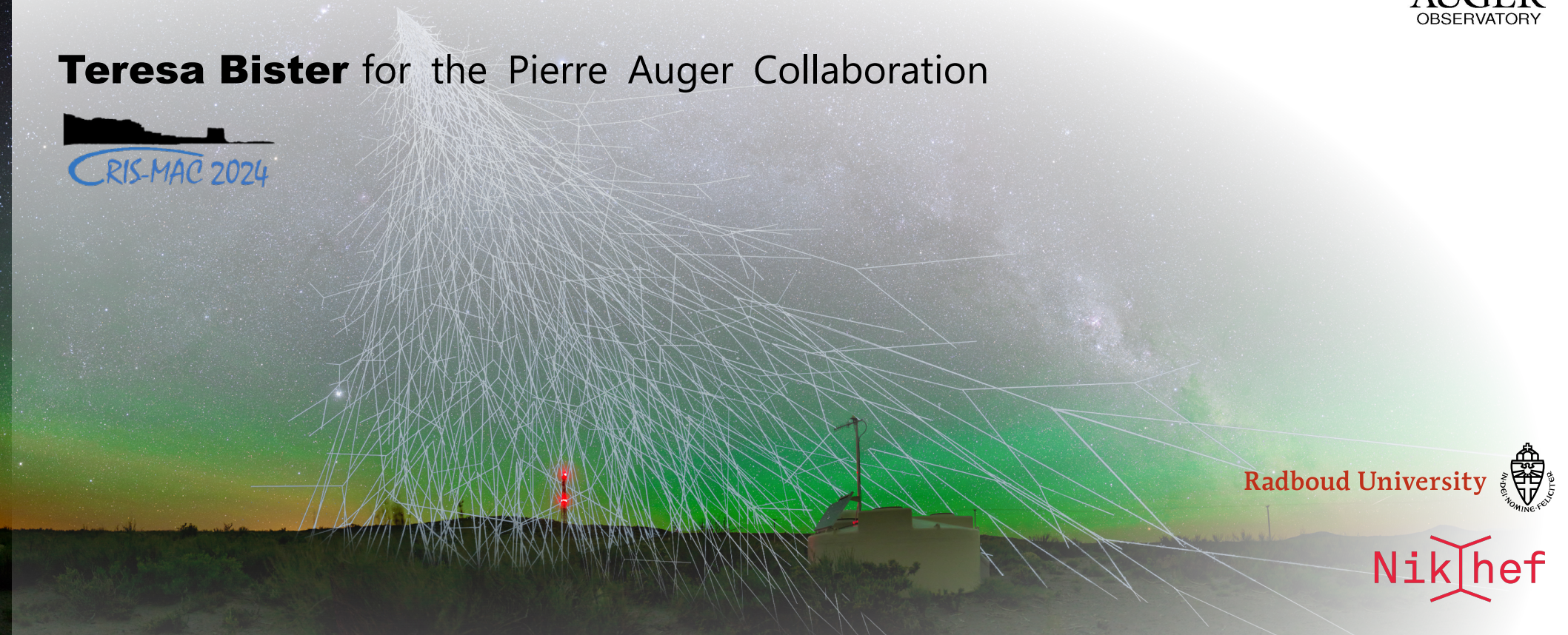


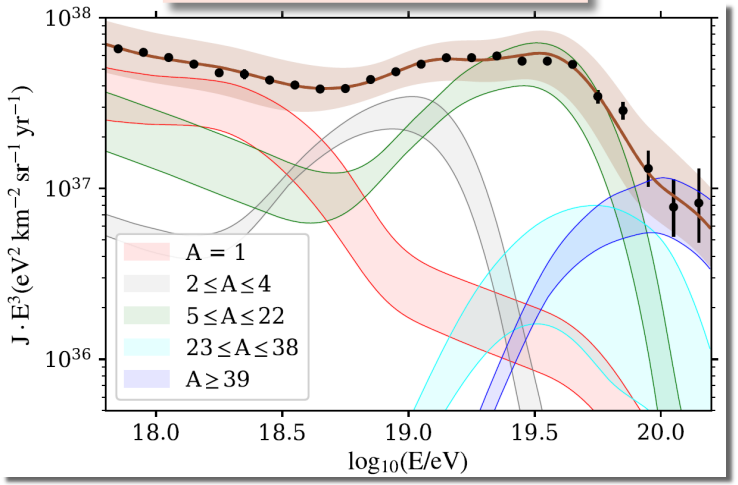
PIERRE AUGER OBSERVATORY

Radboud University

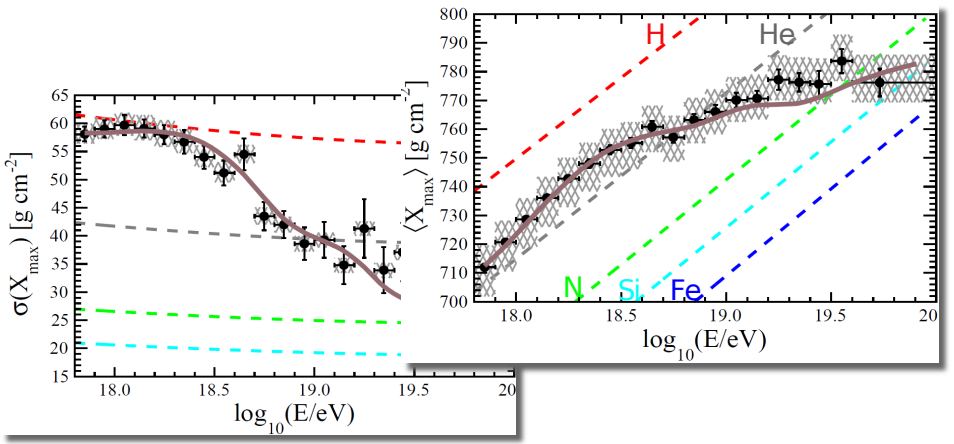
Nikhef

Ultra-high-energy cosmic ray data and interpretation

energy spectrum



mass composition



- can both be **well explained by homogeneously distributed extragalactic sources!**
  - need at least two populations
- can draw **conclusions about injection at the source:**
  - intermediate masses, hard spectrum (unlike shock acceleration expectation)

Arrival directions and magnetic fields

extensions of model:

- hard spectral index could be explained by diffusion in strong **extragalactic magnetic field**
- including **arrival directions** in the fit:
  - all data well described by contribution from nearby starburst galaxies → **4.5σ significance!**