

UHECR sky > 32 EeV from the Pierre Auger Observatory

Anisotropy search in the toe region with Auger phase 1 data spanning 2004-2020 (17 years!)

~4 σ from search in Centaurus region, confirmed by catalog-based searches.

Largest signal from starburst galaxies but **no compelling evidence for catalog preference**

For all these searches: most significant signal at $E_{th} = 38-41$ EeV on top-hat scale $\Psi = 23-27^\circ$ with signal fraction $\alpha = 5-15\%$

Evolution of signal: compatible with **linear growth within expected variance, 5 σ reach expected in 2025-30**

Most important evidence for UHECR anisotropy around the toe from a single observatory \rightarrow **UHECR source ID is near?**

$\Phi(E_{Auger} > 41 \text{ EeV})$ [$\text{km}^2 \text{sr}^{-1} \text{yr}^{-1}$] - Galactic coordinates - $\Psi = 24^\circ$

