Hotspot update and a new excess of events on the sky seen by the Telescope Array experiment

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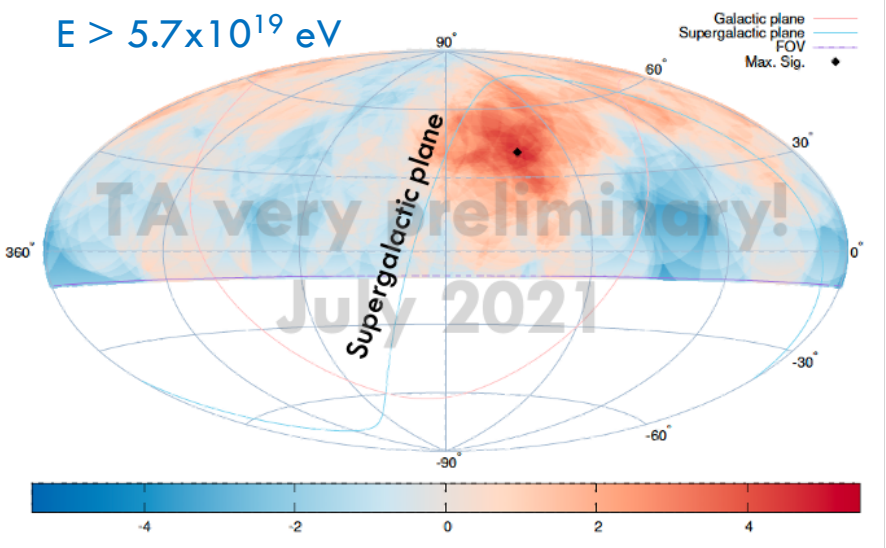
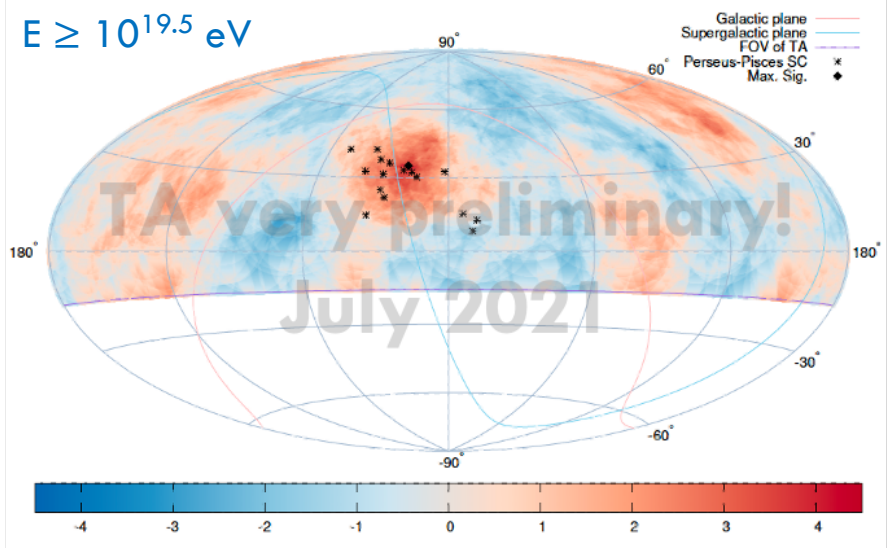
Update on the **hotspot**: 12-year SD data



Significance map in the equatorial coords.

- 179 events with E > 5.7x10^{19}eV
- 5.1σ at (144.0°, 40.5°) with 25°-circle
  40 obs. events / 14.6 iso. events
- **Post-trial probability:** $P(S_{MC} > 5.1\sigma) = 6.8\times10^{-4}$ → **3.2σ**

New excess of events: 11-year SD data



Significance map in the equatorial coords.

- 558 events with E ≥ $10^{19.5}$ eV
- 4.2σ at (19.0°, 35.1°) with 20°-circle
  59 obs. events / 31.5 iso. events
- Chance prob. of having an excess on top of the Perseus-Pisces supercluster → **3.7σ**

- We have persistent hints of intermediate angular scale anisotropies, the **hotspot**, at the highest energies, E ≥ 5.7x10^{19} eV, near the Ursa Major group. (**S_{post} ~3.2σ**)
- A **new excess** appears in slightly lower energy events with the local Li-Ma significance of ~4.2σ.
- Behind the new excess, there is **the Perseus-Pisces supercluster**.
- Having an excess on top of the Perseus-Pisces supercluster by chance is rare (~**3.6σ**).
- More analyses, such as cross-correlation analysis between the data and the Perseus-Pisces supercluster, are underway.