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## Propagation Delays of Ultra-High-Energy Cosmic Ray from Active Galactic Nuclei

We investigate the time delay incurred during ultra-high energy cosmic ray (UHECR) propagation over cosmological distances and its potential impact on the correlation between UHECR directions of arrival and sources such as Active Galactic Nuclei (AGNs), the UHECR chemical composition, and extragalactic magnetic field constraints. We propagate particles in different magnetic field configurations, spanning over an extended range of particle Larmor radii and magnetic field coherence lengths, also including attenuation losses. We find that UHECR delays could easily be comparable to (and longer than) AGN duty cycles, effectively erasing the correlation between known AGNs and UHECR anisotropies. We finally consider how strong constraints on the chemical composition of the heaviest UHECRs could enable a better characterization of extragalactic magnetic fields.

### Collaboration(s)

**Author:** Dr MBAREK, Rostom

**Co-author:** CAPRIOLI, Damiano

**Presenter:** Dr MBAREK, Rostom

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