Contribution ID: **145** Type: **Talk-To-Poster**

A Bayesian source association analysis of UHECRs: Impact of the Galactic magnetic field and composition

We present a statistical analysis of the association between UHECRs and proposed astrophysical sources. Our approach is based on the Bayesian hierarchical framework presented in Capel & Mortlock 2019, but with notable extensions. Using CRPropa3, we now include the lensing effect of the Galactic magnetic field and explore the impact of heavier compositions. This analysis directly connects to the physics of UHECR propagation so that each detected event is allowed different possible deflections and energy-loss horizons based on its measured energy, arrival direction and the corresponding uncertainties. In this way, we can easily interpret the connection to proposed sources in a physical way. We verify our approach using simulated data and then present our results with views of the Northern and Southern skies thanks to publicly available data from both the Telescope Array experiment and Pierre Auger Observatory.

Primary authors: Mr WATANABE, Keito (University of Bonn); FEDYNITCH, Anatoli; CAPEL, Francesca (Max Planck Institute for Physics); Prof. SAGAWA, Hiroyuki (University of Tokyo)

Presenter: CAPEL, Francesca (Max Planck Institute for Physics)