

## AXION-LIKE PARTICLES AS ULTRA HIGH ENERGY COSMIC RAYS?

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If Ultra High Energy Cosmic Rays (UHECRs) with  $E > 4 \times 10^6$  eV originate from objects at cosmological distances (quasars or/and BL Lacertae), the absence of the GZK cutoff can not be reconciled with Standard-Model particle properties. Axions would escape the Greisen-Zatsepin-Kuzmin cutoff, but even the coherent conversion and back-conversion between photons and axions in large-scale magnetic fields is not enough to produce the required flux. However, one may construct models of other novel (pseudo)scalar neutral particles with properties that would allow for sufficient rates of particle production in the source and shower production in the atmosphere to explain the observations. As an explicit example for such particles we consider SUSY models with light sgoldstones.