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Diffusion of UHECRs in extragalactic magnetic fields

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The origin and nature of the ultra-high energy cosmic rays (UHECRs) are still unresolved issues. Ultra-high energy cosmic rays can propagate diffusively in cosmic magnetic fields. When their propagation time is comparable to the age of the universe a suppression of the flux compared to the case without magnetic fields is expected. In this work we parametrize this suppression for different cosmological simulations of the magnetized cosmic web. We also derive upper limits for this suppression to occur for some models of extragalactic magnetic fields, and discuss the consequences of this to the UHECR spectrum and composition.

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