



# The need for a local source of UHE CR nuclei

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(Submitted on 11 Jul 2011 (v1), last revised 13 Feb 2012 (this version, v2))

Recent results of the Pierre Auger (Auger) fluorescence detectors indicate an increasingly heavy composition of ultra-high energy (UHE) cosmic rays (CRs). Assuming that this trend continues up to the highest energies observed by the Auger surface detectors we derive the constraints this places on the local source distribution of UHE CR nuclei. Utilizing an analytic description of UHE CR propagation we derive the expected spectra and composition for a wide range of source emission spectra. We find that sources of intermediate-to-heavy nuclei are consistent with the observed spectra and composition data above the ankle. This consistency requires the presence of nearby sources within 60 Mpc and 80 Mpc for silicon and iron only sources, respectively. The necessity of these local sources becomes even more compelling in the presence nano-Gauss local extragalactic magnetic fields.

Comments: 10 pages, 8 figures

Subjects: **High Energy Astrophysical Phenomena (astro-ph.HE)**

Journal reference: Phys.Rev.D84:105007,2011

Cite as: **arXiv:1107.2055 [astro-ph.HE]**

(or **arXiv:1107.2055v2 [astro-ph.HE]** for this version)

## Submission history

From: Andrew Taylor [[view email](#)]

[v1] Mon, 11 Jul 2011 15:19:40 GMT (90kb,D)

[v2] Mon, 13 Feb 2012 09:36:01 GMT (94kb,D)

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