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Can solar 6Li abundance really be explained by Galactic cosmic-rays?

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Abstract content

Cosmic-ray interactions are the only known source of the rare isotope 6Li. The standard picture is that the observed solar 6Li is produced by galactic cosmic-rays accelerated in supernova remnants. Thus lithium-6 is a unique probe of the local Galactic (hadronic) cosmic-ray history. On the other hand, extragalactic gamma-ray background is a measure of cosmic-ray fluence but for the average star-forming galaxy. Using the connection between production of lithium and hadronic gamma-rays in cosmic-ray interactions we tested this assumption and came to a surprising and alarming result: extragalactic gamma-ray background allows for only ˜50% of solar lithium-6 abundance to be produced by Galactic Cosmic Rays. Although extreme assumptions yield a consistent picture, more realistic ones indicate that solar 6Li cannot be produced by standard GCRs alone without overproducing the hadronic gamma rays.

If this papers is presented for a collaboration, please specify the collaboration

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olivo, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 2 (OG part 1), pages 113-116

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