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Probing Nearby CR Accelerators and ISM Turbulence with Milagro Hot Spots LUKE DRURY, Dublin Institute for Advanced Studies, MIKHAIL MALKOV, PATRICK DIAMOND, UCSD, ROALD SAGDEEV, University of Maryland — Acceleration of cosmic rays (CR) in supernova remnant shocks should result in an almost isotropic CR spectrum. Yet the MILAGRO TeV observatory discovered a sharp $\sim$10 deg arrival anisotropy. We suggest a mechanism for producing a narrow CR beam which operates en route to the observer. The key assumption is that CRs are scattered by a strongly anisotropic Alfven wave spectrum formed by the turbulent cascade across the local field direction. The strongest pitch-angle scattering occurs for particles moving almost precisely along the field line. The enhanced scattering results in a weak but narrow particle excess. The width, the fractional excess and the maximum momentum of the beam are calculated from a systematic transport theory depending on a single scale L which can be associated with the longest Alfven wave, efficiently scattering the beam. The best match to all the three characteristics of the beam is achieved at L$\sim$1 pc. The distance to a possible source of the beam is estimated to be within a few 100pc. Possible approaches to determination of the scale L from the characteristics of the source are discussed. Alternative scenarios of drawing the beam from the galactic CR background are considered. The beam related large scale anisotropic CR component is found to be energy independent which is also consistent with the observations.

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