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Probing Nearby CR Accelerators and ISM Turbulence with Milagro and IceCube Hot Spots[1] LUKE DRURY, Institute of advanced Studies, Dublin, 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 and now IceCube discovered a sharp $\sim$10 deg arrival anisotropy. We suggest a mechanism for producing a narrow CR beam which operates en route to the observer. The key assumption is that CRs are scattered by anisotropic Alfven waves formed in a turbulent cascade across the local field direction. The strongest pitch-angle scattering occurs for particles moving almost precisely along the field line. The enhanced scattering results in a narrow particle excess. The width, the excess and the maximum momentum of the beam are calculated from a systematic transport theory depending on a scale L which can be associated with the longest Alfven wave, efficiently scattering the beam. The best match to all the three characteristics of the beam is achieved at L$\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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