

A hot spot in the neutrino flux created by cosmic rays from Cygnus loop

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An analysis of 7.5 years of data in the high-energy starting event sample has been recently published by the IceCube collaboration. The hottest spot in a search for neutrino sources was found far above the Galactic plane and is thus, at first sight, difficult to reconcile with a Galactic origin. In this work, we calculate the cosmic ray (CR) density around nearby, young supernova remnants, assuming anisotropic diffusion. Combining these CR densities with dust maps, we find two prominent hot spots: One, produced by CRs from Vela interacting with gas close to the wall of the Local Bubble, is absent in the IceCube high-energy starting event sample. The other one, produced by CRs from the Cygnus loop agrees in position with the hottest spot in the IceCube neutrino data.

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