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IceCube Search for High-Energy Neutrinos from Ultra-Luminous Infrared Galaxies

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With infrared luminosities $L_{\rm IR} \geq 10^{12} L_{\odot}$, Ultra-Luminous Infrared Galaxies (ULIRGs) are the most luminous objects in the infrared sky. They are predominantly powered by starburst regions with star-formation rates $>\sim 100\ M_{\odot}\ {\rm yr}^{-1}$. ULIRGs can also host an active galactic nucleus (AGN). Both the starburst and AGN environments contain plausible hadronic accelerators, making ULIRGs candidate neutrino sources. We present the results of an IceCube stacking analysis searching for high-energy neutrinos from a representative sample of 75 ULIRGs with $z \leq 0.13$. While no significant excess of ULIRG neutrinos is found in 7.5 years of IceCube data, upper limits are reported on the neutrino flux from these 75 ULIRGs as well as the full ULIRG source population. In addition, constraints are provided on models predicting neutrino emission from ULIRGs.

Keywords

ULIRG; neutrino sources; stacking analysis

Collaboration

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other Collaboration

Subcategory

Experimental Results

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