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The HELIX experiment

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Recent discoveries of new features in Galactic cosmic-ray fluxes emphasize the importance of understanding the propagation of cosmic rays in our Galaxy. A better understanding of cosmic ray propagation is also important to study the Galactic diffuse emission of high-energy gamma rays and high-energy neutrinos. HELIX (High Energy Light Isotope eXperiment) is a balloon-borne experiment designed to measure the chemical and isotopic abundances of light cosmic-ray nuclei at energies above 0.1 GeV/n. The detector is optimized to improve the measurements of the propagation clock isotopes Be-10 and stable secondary isotopes Be-9 with a good mass resolution. This data will be essential to study the propagation of the cosmic rays in our Galaxy. The first flight of HELIX is scheduled to be launched from Sweden in the 2024, aiming to collect beryllium isotopes up to 3 GeV/n. I will review the scientific goals of HELIX in light of the multi-messenger era and report its current status and project plans.

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