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Gamma-ray emission from the Sagittarius Dwarf Spheroidal galaxy due to millisecond pulsars

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The Fermi Bubbles are giant, gamma-ray emitting lobes emanating from the nucleus of the Milky Way discovered in ~ 1 -100 GeV data collected by the Fermi Gamma-Ray Space Telescope. Previous work has revealed substructure within the Fermi Bubbles that has been interpreted as a signature of collimated outflows from the Galaxy's super-massive black hole. In this talk, I will show that much of the gamma-ray emission associated to the brightest region of substructure – the so-called cocoon – is likely due to the Sagittarius dwarf spheroidal (Sgr dSph) galaxy. This large Milky Way satellite is viewed through the Fermi Bubbles from the position of the Solar System. As a tidally and ram-pressure stripped remnant, the Sgr dSph has no on-going star formation, but I will demonstrate that the dwarf's millisecond pulsar (MSP) population can plausibly supply the observed gamma-ray signal. This finding plausibly suggests that MSPs produce significant gamma-ray emission amongst old stellar populations, potentially confounding indirect dark matter searches in regions such as the Galactic Centre, the Andromeda galaxy, and other massive Milky Way dwarf spheroidals.

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