

# The Peanut Shaped Fermi Galactic Centre Excess

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The Fermi Large Area Telescope (LAT) has observed an excess of GeV gamma rays coming from Galactic Centre. The two main competing explanations are an unresolved population of millisecond pulsars or self-annihilating dark matter. One distinguishing feature of these two explanations is that in the annihilating dark matter case the excess is predicted to be very close to spherically symmetric. While in the millisecond pulsar case, the excess is expected to trace the stellar mass of the bulge which has a boxy/peanut shape. Previous studies have shown that the excess is better described by a boxy morphology compared to a spherical morphology. I will present new results showing that the excess actually has more of a peanut like (double bump) shape as opposed to a boxy shape. We demonstrated this by non-parametrically constructing a template of the Galactic bulge stellar distribution from the Vista Variables in the ViaLactea (VVV) infrared data. We then found that this peanut-shaped template provides a significantly better fit to the Galactic Centre excess.

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