

Dark Matter Searches for Extended Sources

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Modeling Extended Sources

Main Progress:

1) Major LiFF overhaul

Many improvements internally stable fits, better handling of $BG=0$ and deficits. Main change in the user interface: **Support very general source model definitions (spectra and morphologies)** through ModelInterface class designed for LiFF/3ML

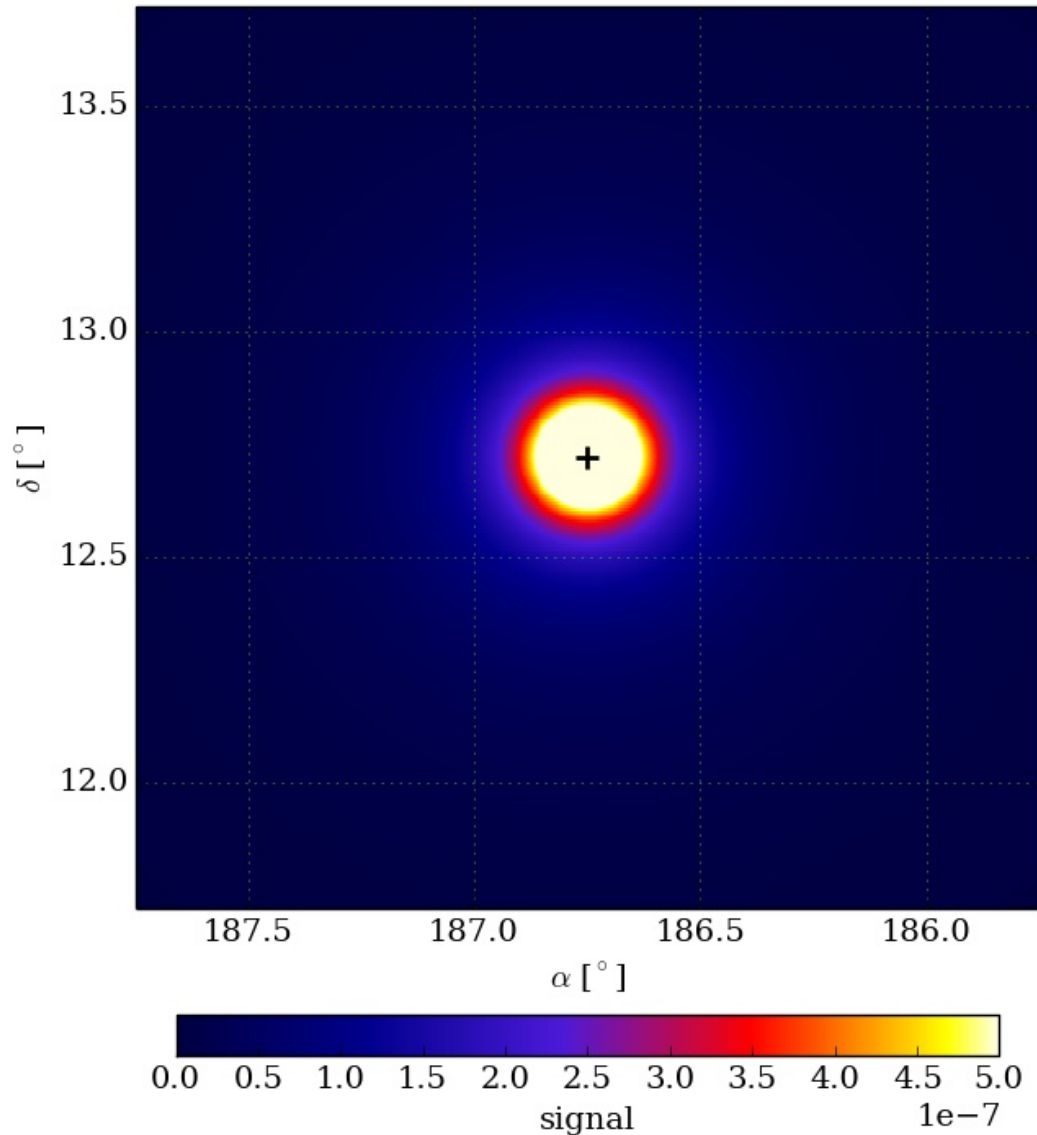
2) Morphology Modeling

- **PSF convolution with arbitrary morphologies** implemented in LiFF
- **LiFF-through-3ML testing** in progress, e.g. new functionality to use healpix maps to define source morphologies

3) Extended Source Templates

UNM has developed preliminary code to calculate and output expected fluxes per HEALPix pixels for dark matter morphologies (currently NFW profile).

Sneak Peak: Healpix Map of Dark Matter Annihilation in Virgo



- Per-pixel (NSide 4096) expected signal with arbitrary scaling
- NFW profile, hence sharply peaked in the center (visible extent on the left largely dependent on color scale cut-off choice)
- For each analysis bin, multiply with expected gamma count for given spectrum (from LiFF)