

CYGNUS (CYprus models for Galaxies and their NUClear Spectra)

Polar dust models

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The polar dust models have been used for the interpretation of the spectral energy distribution of the hyperluminous infrared galaxy IRAS F10214+4724 in Efstathiou (2006) and Efstathiou et al (2013). They have also been used for the interpretation of the tidal disruption event in Arp299 by Mattila et al (2018). The models form part of the CYGNUS collection of models (<http://arc.euc.ac.cy/cygnus/>).

A small library of models is included in the structure *polar_dust*. To restore in Python type for example

```
>>>import numpy as np
>>>polar_dust_structure = np.load(' polar_dust_library1.npy',allow_pickle=True)
```

The structure has the following fields which are explained below:

TEMPERATURE, WAVELENGTH, NUSNU

The temperature is in Kelvin, the wavelength is in microns and nuSnu is normalized to give a bolometric luminosity of unity. The library of models can be used to synthesize an ensemble of clouds in the polar region with a range of temperature and covering factors.

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References

Efstathiou, A., 2006, MNRAS, 371, L70
Efstathiou, A., et al., 2013, MNRAS, 436, 1873
Mattila, S., et al., 2018, Science, 361, 482