

CYGNUS (CYprus models for Galaxies and their NUClear Spectra)

Starburst models

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The starburst models are described in more detail in Efstathiou, Rowan-Robinson & Siebenmorgen (2000) and Efstathiou & Siebenmorgen (2009). The models form part of the CYGNUS collection of models (<https://arc.euc.ac.cy/cygnus/>).

The starburst models are contained in the structure *sb*. To restore in Python type for example

```
>>>import numpy as np
>>>starburst_structure = np.load('starburst_models12_low_res.npy',allow_pickle=True)
```

The structure has the following fields:

AGE, TV, LEAK, T_LEAK, TAU, EXTRA, SPECTRUM

Where

- AGE is the age of the starburst in yrs
- TV is the initial optical depth of the molecular clouds
- LEAK is the fraction of light that escapes from molecular clouds completely unattenuated
- T_LEAK is the time after which LEAK becomes effective
- TAU is the e-folding time of the starburst star formation rate
- SPECTRUM is a structure within the structure that contains the wavelength grid (in microns - note this is different from the AGN torus models grid) and nuSnu (in solar luminosities) of each model.

All models assume that the starburst has an initial star formation rate of 1Mo/yr.

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References

Efstathiou, A., Rowan-Robinson, M., & Siebenmorgen, R., 2000, MNRAS, 313, 734.

Efstathiou, A., & Siebenmorgen, R., 2009, AA, 502, 541.