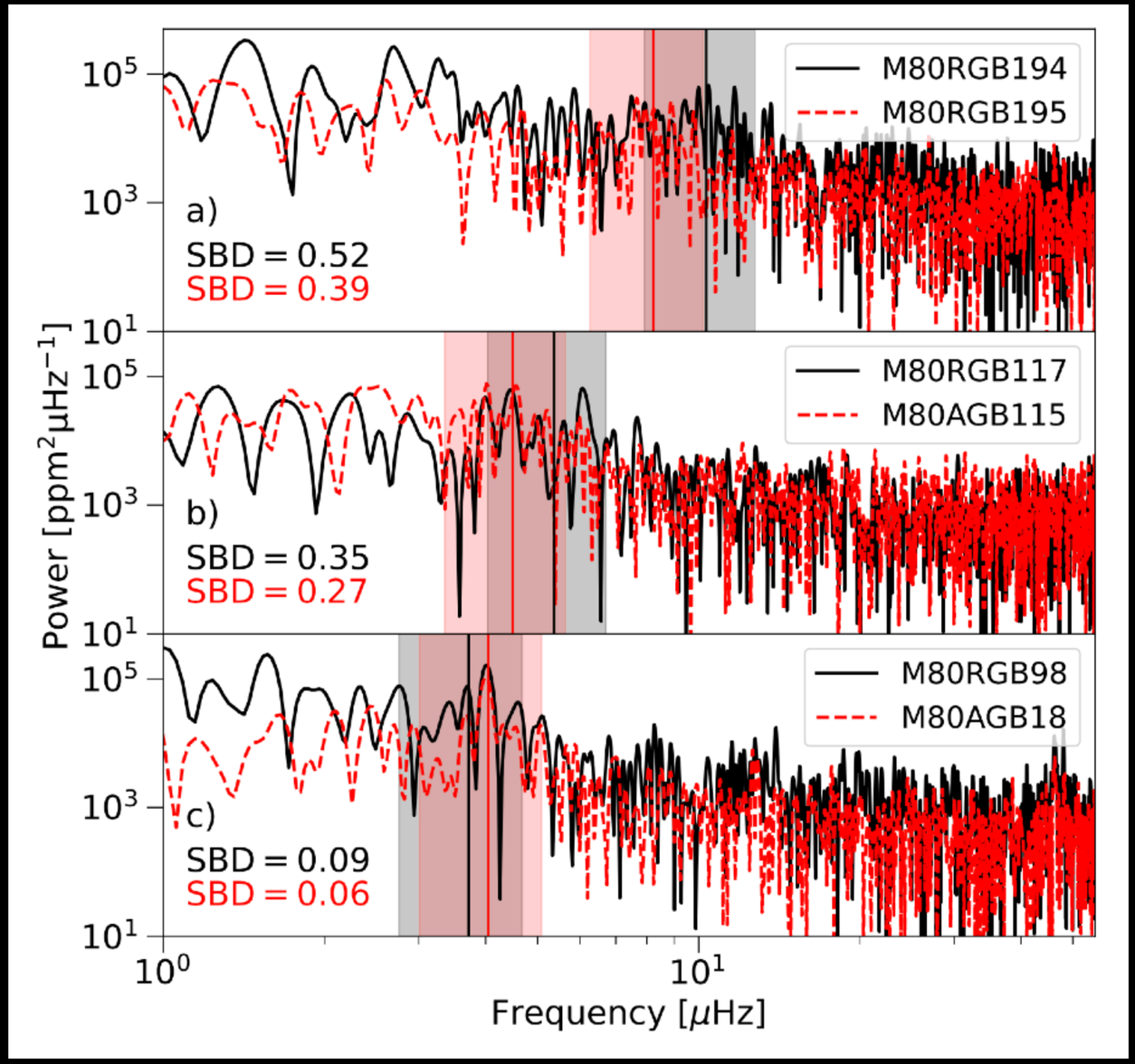
# Data Treatment

***Shape base distance Algorithm (SBD)***

- to quantify the similarity between two power spectra.
- A perfect correlation corresponds to a metric of **0**
  and
  an Anticorrelation corresponds to a metric of **2**.
- They test this for neighbour stars and discard those who had very similar pattern (Contaminated)

(angular distance of ~8") a neighbouring star.




Howell, M., 2023. doi:10.48550/arXiv.2307.07158.

# Seismic Quantities

pySYD pipeline

$$\nu_{max} \propto g T_{eff}^{-1/2}$$

$$\Delta\nu \propto \rho^{-1/2}$$

## *Information that we can obtain*

- In this study they look for Solar-like oscillations in a star's power spectrum (≤ 20 μHz)
- They characterized by two globalseismic quantities:

$\nu_{max}$ **the frequency of the maximum acoustic power**,

and

$\Delta\nu$ **the large frequency spacing between adjacent overtone oscillation modes.**

$$\left(\frac{M}{M_\odot}\right) \simeq \left(\frac{\nu_{\rm max}}{\nu_{\rm max,\odot}}\right)^{3} \left(\frac{\Delta\nu}{\Delta\nu_\odot}\right)^{-4} \left(\frac{T_{\rm eff}}{T_{\rm eff,\odot}}\right)^{3/2} \quad (1)$$

$$\left(\frac{M}{M_\odot}\right) \simeq \left(\frac{\Delta\nu}{\Delta\nu_\odot}\right)^{2} \left(\frac{L}{L_\odot}\right)^{3/2} \left(\frac{T_{\rm eff}}{T_{\rm eff,\odot}}\right)^{-6} \quad (2)$$

$$\left(\frac{M}{M_\odot}\right) \simeq \left(\frac{\nu_{\rm max}}{\nu_{\rm max,\odot}}\right) \left(\frac{L}{L_\odot}\right) \left(\frac{T_{\rm eff}}{T_{\rm eff,\odot}}\right)^{-7/2} \quad (3)$$

$$\left(\frac{M}{M_\odot}\right) \simeq \left(\frac{\nu_{\rm max}}{\nu_{\rm max,\odot}}\right)^{12/5} \left(\frac{\Delta\nu}{\Delta\nu_\odot}\right)^{-14/5} \left(\frac{L}{L_\odot}\right)^{3/10} \quad (4)$$

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