ANALYSIS OF LAMBDA-ORIONIS

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1 MODELLING

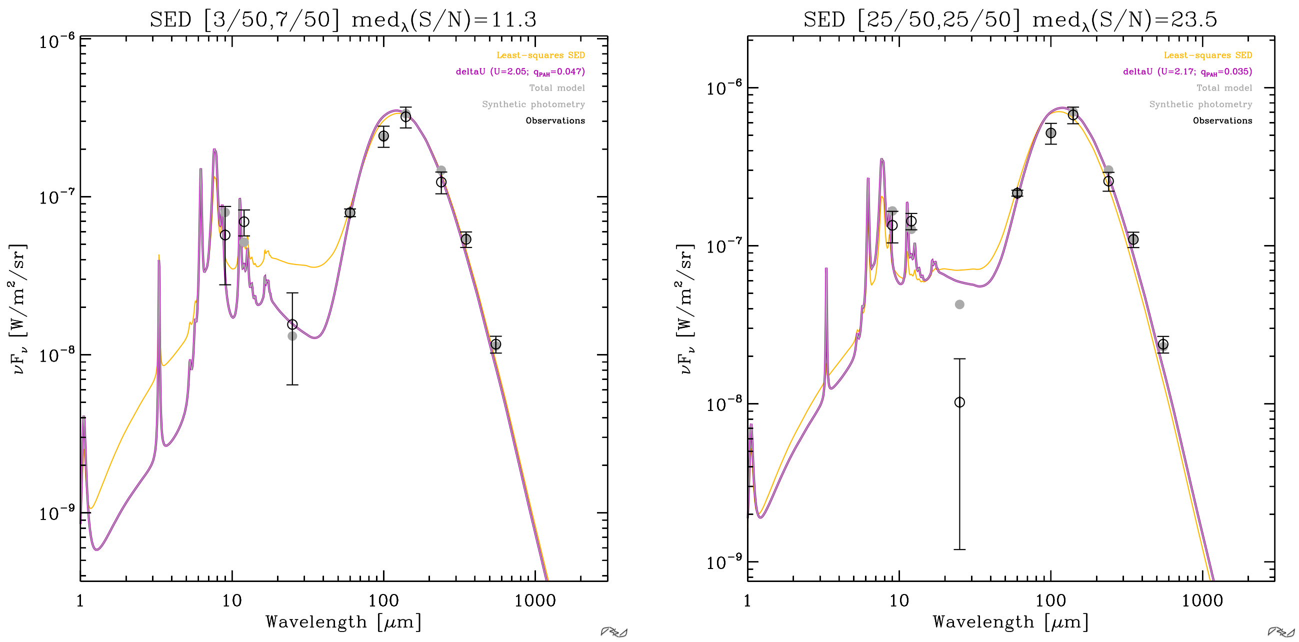

Figure 1: *Select SED fits.*

We have modelled the *AKARI*$_{9\,\mu\text{m}}$ and the *DIRBE* bands, with the hierarchical Bayesian model of Galliano (*submitted*). Since the far-IR peak of the SED, emitted by large grains, appears roughly isothermal, we have used a uniformly illuminated dust mixture (AC model of Galliano et al., 2011). Select SED fits are shown in Fig. 1.

2 RESULTS

Fig. 2 shows the correlation of the column densities of the whole dust mixture, M_{dust}, the PAHs, M_{PAH}, and the charged PAH, $M_{\text{PAH+}}$. The x-axis parameter, I_{AME}/U is a hybrid quantity. Ideally, we would like to plot the column density of the AME carriers, derived from the cm-wavelength fit. However, since this quantity is not available, we simply divide the AME intensity by the exitation rate of the dust, implictly assuming that there is a link between the radiation field and the collision rate responsible

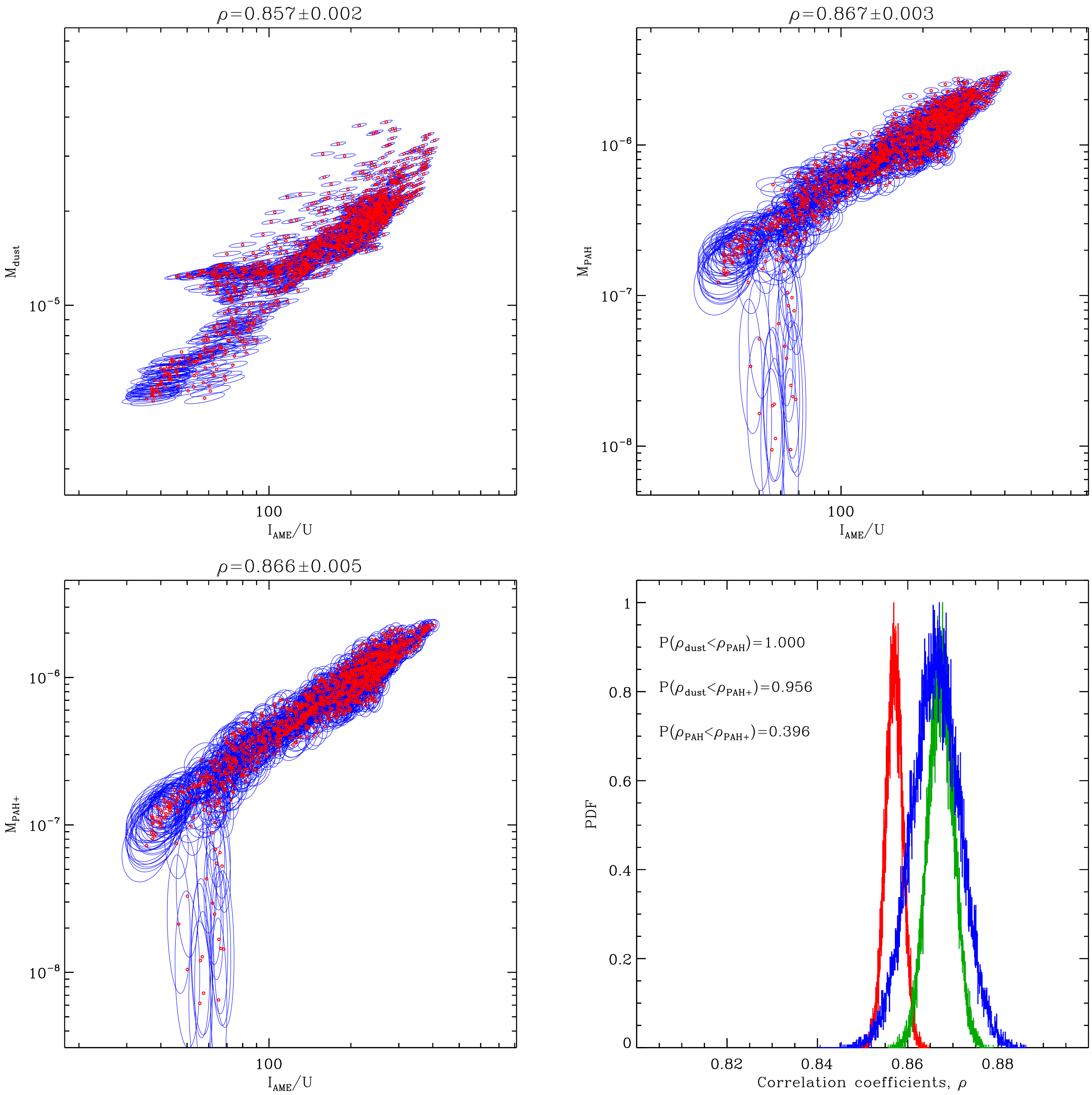

Figure 2: *Correlations with AME.* The two upper panels and the lower left panel shows the Bayesian correlation between the column densities of different dust components, as a function of I_{AME}/U. The lower right panel shows the PDF of the correlation coefficients of these three relations.

for grain rotation. Another way to look at it is to realize that $M_X \times U$ is the power emitted by dust component X.

The lower-right panel of Fig. 2 tells us that there is certainty that PAHs correlate better with AME than with the whole dust. However, isolating the fraction of chage PAHs simply increases the noise but does not allow us to conclude on this particular component.

References

Galliano, F. ????, *submitted*

Galliano, F., Hony, S., Bernard, J.-P., et al. 2011, A&A, 536, A88