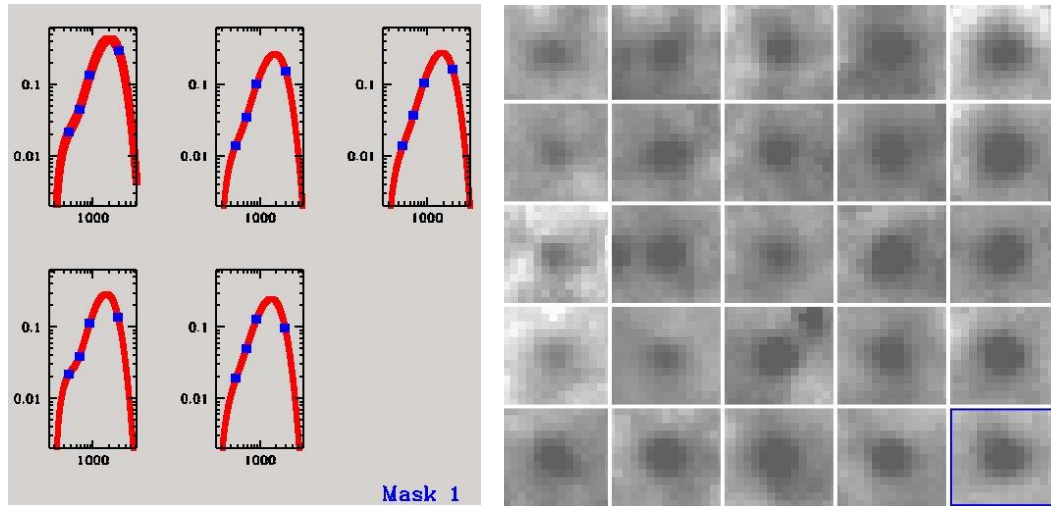


Estimating the properties of gas and dust in clusters of galaxies

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Using IRAS and Planck LFI/HFI data we have determined the properties of dust and gas in a sample of $\sim 100,000$ clusters of galaxies detected in SDSS. The signal of such clusters is clearly detected in all Planck maps from 70 to 857 GHz. The signal detected corresponds to a temperature ~ 25 K, and is compatible with expectations accounting for the contribution of dust in cluster member galaxies. The dust in the intracluster media is not detected, but the analyses as a whole show that the amount of this component is very small. We study the relation between mass of dust and richness, and study the evolution with redshift. We find a clear increase in luminosity with redshift that agrees with the trend expected from current models.



Left: Blue dots are the mean flux obtained for five of the bins shown on the figure of the left. The red line are the best fit obtained parametrizing the Sunyaev-Zeldovich effect, and using for the dust a function $\sim \nu^\alpha B_\nu(T)$.

Right: Planck HFI maps ($20' \times 20'$) at 857 GHz obtained by stacking and averaging the signal on each cluster. Each bin contains the signal of ~ 2000 clusters and corresponds to a given range in mass (increasing from left to right) and redshift (increasing from top to bottom).