Simulations of the Infrared Sky

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One of the main tasks of FIRST is to carry out shallow and deep surveys in the far-IR / submm spectral domain with unprecedented sensitivity. Selecting unbiased samples out of deep surveys will be crucial to disclose the entire history of evolving dusty objects, and therefore of the star-formation.

However, the usual procedures to extract information from a survey, i.e. selection of sources, computing the number counts, the luminosity and the correlation functions, and so on, cannot lead to a fully satisfactory and rigorous determination of the source characteristics. To check the reliability of the obtained results the simulation, via Monte Carlo techniques, of a large number of mock surveys is mandatory. This provides information on the observational biases and instrumental effects introduced by the observing procedures and allow to understand how the different parameters affect the source observation and detection.

We present here the first results of a project aiming at developing the tools to simulate the extragalactic far-IR/submm sky as PACS (and SPIRE) will see, to build up complete mock catalogues, to single out high-z candidates in colour-colour diagrammes and to construct a photometric redshift catalogue.
This latter allows to understand how redshifts are extracted from the used photometric bands and how photometric errors affect the selection of high-redshift 'candidates' from colour-colour plots.