

1. The Sample

The targets for this survey were selected from five fields of low foreground Galactic cirrus levels that were mapped by deep *Spitzer* imaging programs. Four of the fields were surveyed by *Spitzer* as part of the ~ 50 square degree SWIRE program (Lonsdale et al. 2003); only the four northern SWIRE fields were considered to enable follow-up from ground-based telescopes in the northern hemisphere. The fifth field studied here was surveyed as part of the ~ 5 square degree extragalactic component of the *Spitzer* First Look Survey (Fadda et al. 2006). Table 1 provides a summary of the target fields. The SWIRE and First Look Surveys have $24\mu\text{m}$ sensitivities of 0.2–0.3 mJy (5σ), and so each detection in this sample of 5–100 mJy $24\mu\text{m}$ sources is quite robust.

There are a total of 1737 sources in these fields with a $24\mu\text{m}$ flux density between 5 and 100 mJy. A breakdown of the number of targets in each field is provided in Table 1 (*maybe we don't want to include the column titled 'Total Sample'*). After excluding stars, extended targets (to maximize the flux that falls within the spectrograph's slit), targets with nearby companions or pre-existing *Spitzer* spectroscopy, and targets lacking IRAC data, the 'Parent Sample' consists of 800 potential sources. From the Parent Sample a total of 330 sources were randomly chosen for follow-up *Spitzer* spectroscopy. To ensure that the Final Sample properly reflected the characteristics of the larger Parent Sample, the selection was forced to yield the same fraction of targets in $24\mu\text{m}$ flux density bins of 5–7, 7–10, 10–15, 15–25, and 25–100 mJy (see Figure 1). Figure 2 shows that the Final and Parent Samples show similar distributions of mid-infrared colors as a function of $24\mu\text{m}$ brightness.

Do we want to say anything on this? In addition to ensuring that the selection was carried out appropriately in terms of colors and the proportion of objects appearing at different brightnesses, we can check whether the exclusion of extended targets significantly biased our sample. Figure XXX and Table YYY ... The sizes of the sources in the Final Sample statistically differ very little from those in the Parent Sample.

REFERENCES

- Lonsdale, C. et al. 2003, PASP, 225, 897
 Fadda, D. et al. 2006, AJ, 131, 2859

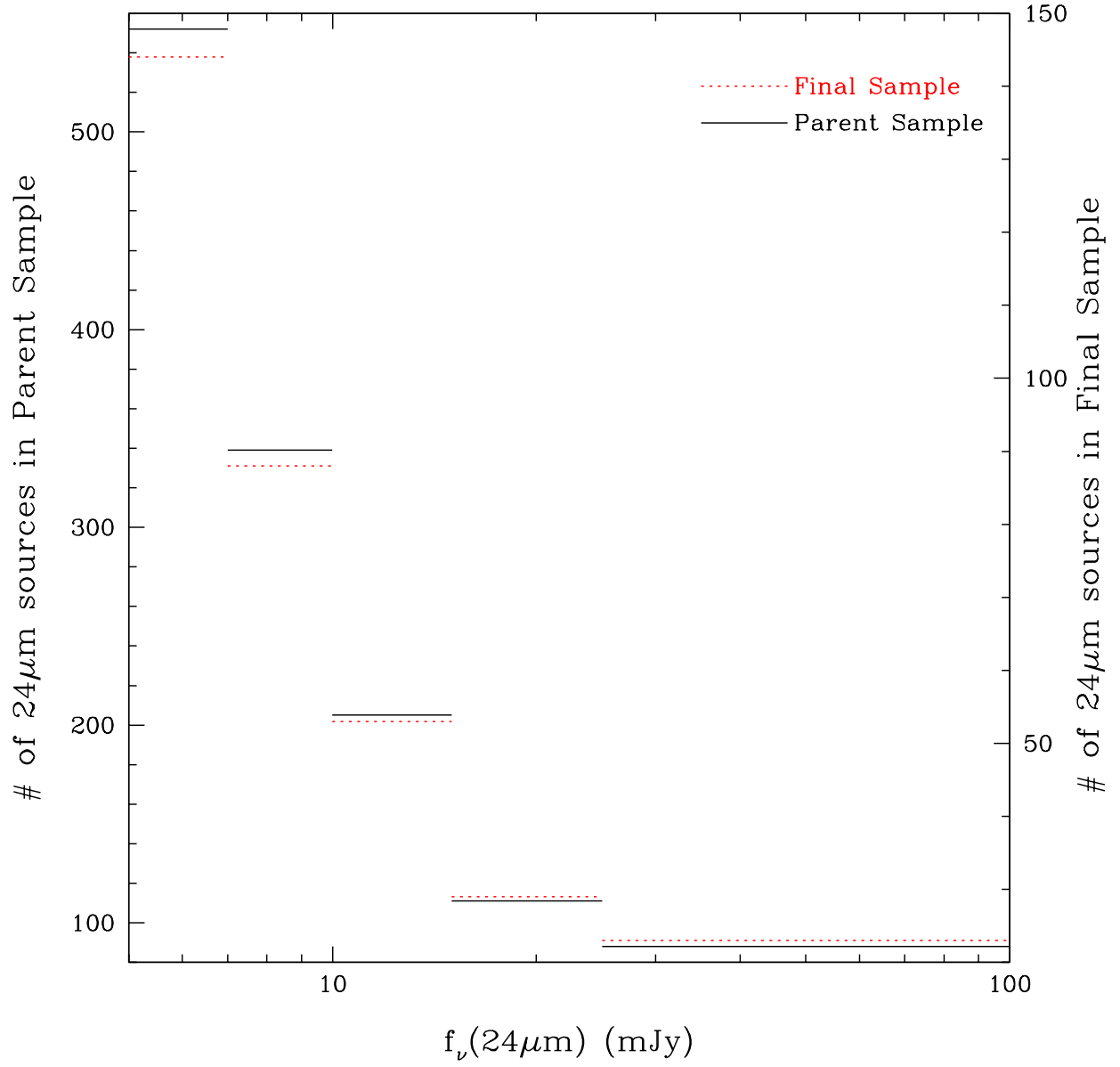


Fig. 1.— A comparison of how the Final and Parent Samples populate different bins of $24\mu\text{m}$ flux density.

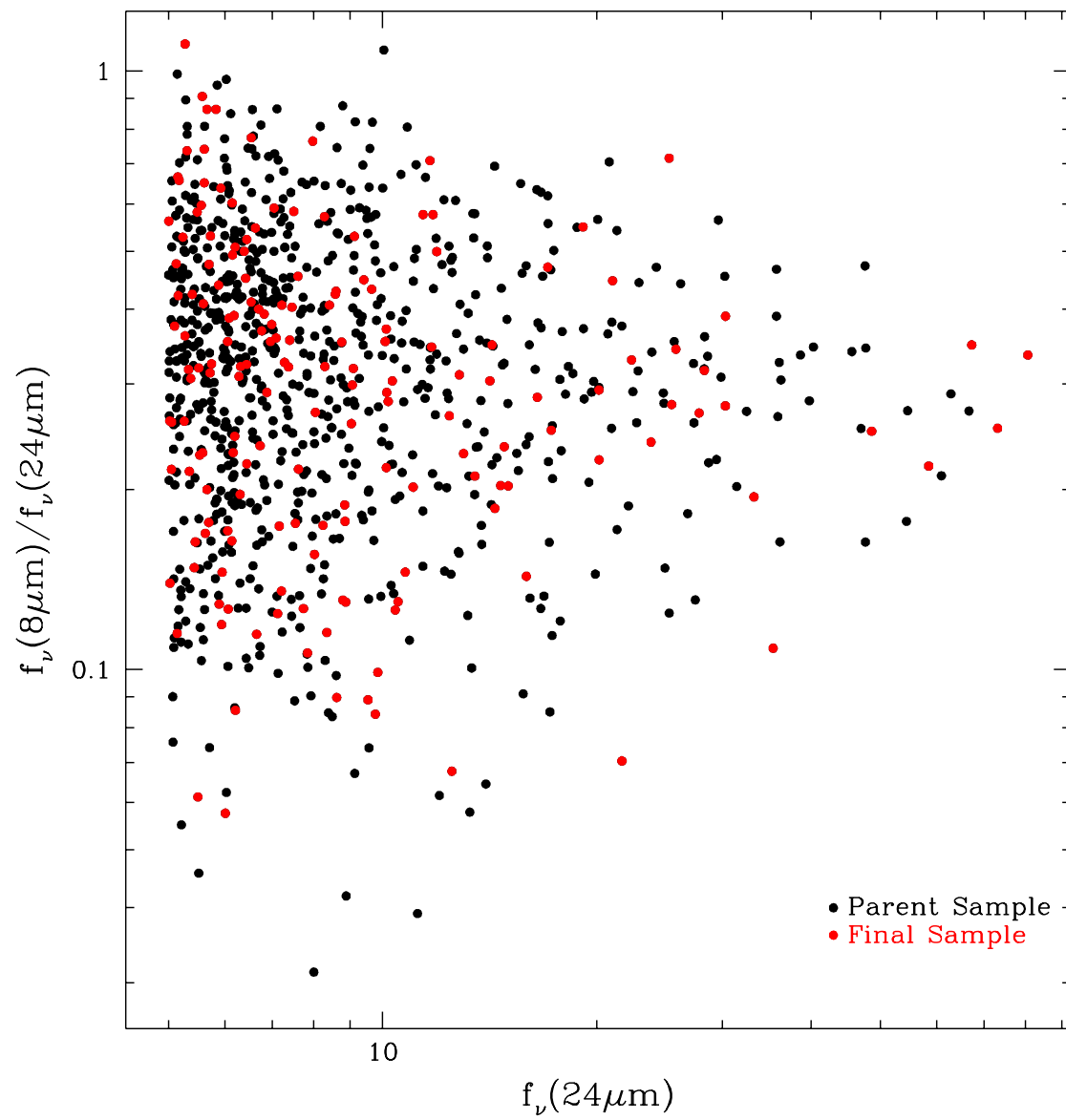


Fig. 2.— A comparison of mid-infrared colors in the Final and Parent Samples.

Table 1. Target Fields

Field	α_0 δ_0 (J2000.0)	Cirrus $I(100\mu\text{m})$ (MJy/sr)	$24\mu\text{m}$ Map Size ($\square^\circ$)	Total ^a Sample	Parent ^b Sample	Final ^c Sample
XMM-LSS	022120–043000	1.3	9.1	314	159	75
Lockman	104500+580000	0.38	11.1	288	133	79
ELAIS N1	161100+550000	0.44	9.3	365	173	96
ELAIS N2	163648+410145	0.42	4.2	183	73	41
FLS Exgal	171800+593000	1.2	5.0	184	59	39

^aThe total number of $24\mu\text{m}$ sources in each field with flux densities between 5 and 100 mJy.

^bThe number of 5–100 mJy $24\mu\text{m}$ sources after excluding stars, extended targets, targets with nearby companions or existing *Spitzer* spectroscopy, and targets lacking IRAC data.

^cThe number of $24\mu\text{m}$ sources randomly chosen from the Parent Sample for follow-up *Spitzer* spectroscopy.