COSMOS Spectroscopic Redshift - Selection Functions and Completness - Version 1.0

Selection Functions

As most of our information is from unpublished catalogues not much information is available. However the majority of sources are in the GAMA database (see Davies et al. 2014) which includes data from many different surveys but in particular the zCOSMOS survey. An additional redshift survey with the Magellan telescope was attained targeting X-ray sources and was merged into the catalogue. The GAMA field completness does drop off towards the edges of COSMOS field (see next section), but does cover most of the deep photometric observations. The zCOSMOS survey primarily targeted sources with $i < 23.5$ mag but does contain many sources with $i > 22.5$mag. The Magellan spectroscopic selection is based on X-ray ($f_{0.5-10keV} > 8 \times 10^{-16}$ erg cm^{-2} s^{-1}) and i-band magnitude ($i^{+}_{AB} < 22$).

Completness

The completness of the GAMA-10/zCOSMOS database is a function of magnitude and position, with the areas covered by deep photometric observations with completness values of ∼30% of all galaxies, but around ∼80% of bright ($r < 23$) sources. Figure 1 shows the completness across the region and Figurefig:zCOSmag shows the completness against optical brightness. The Magellan follow-up of X-ray sources completness is largely limited by the abillity to place slits and was only able to target 667/1310 possible X-ray sources (52%) but should be a random subset of the data. The survey completness for all targeted galaxies is 90%, however this is not uniform for all object classes and redshifts (for more details see Trump et al. 2009).

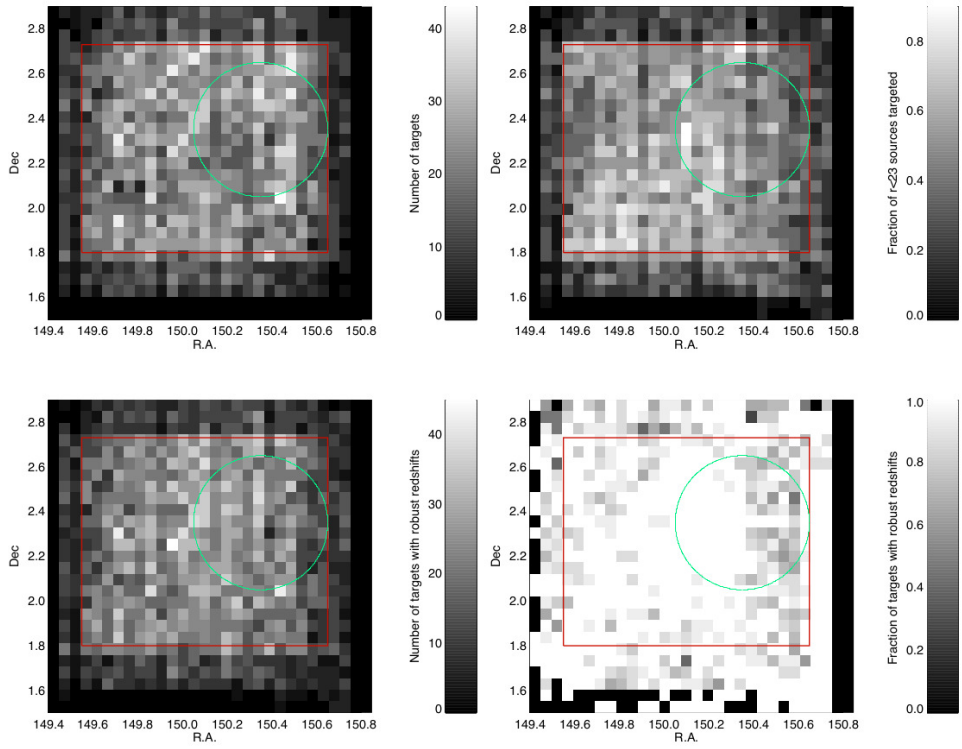

Figure 1 This figure has been taken from Figure 4 in the GAMA-10 release paper (Davies et al. 2014). The caption taken directly from the paper is: zCOSMOS-bright spectroscopic coverage for $r < 23.0$ mag and $i < 22.0$ mag combined sources in the COSMOS region binned on 3 scales, light colours represent high number/fraction of sources. Top left: density of zCOSMOS spectroscopic targets, top right: fraction of all $r < 23.0$ mag and $i < 22.0$ mag combined sources targeted by the zCOSMOS observations (i.e. the target sampling rate), bottom left: number of targets with robust spectroscopic redshifts in our full sample and bottom right: fraction of zCOSMOS observed sources with robust spectra in our full sample. We define the G10 region as the area bounded by the red box, this region has high completeness and includes the CHILES VLA region (cyan circle)

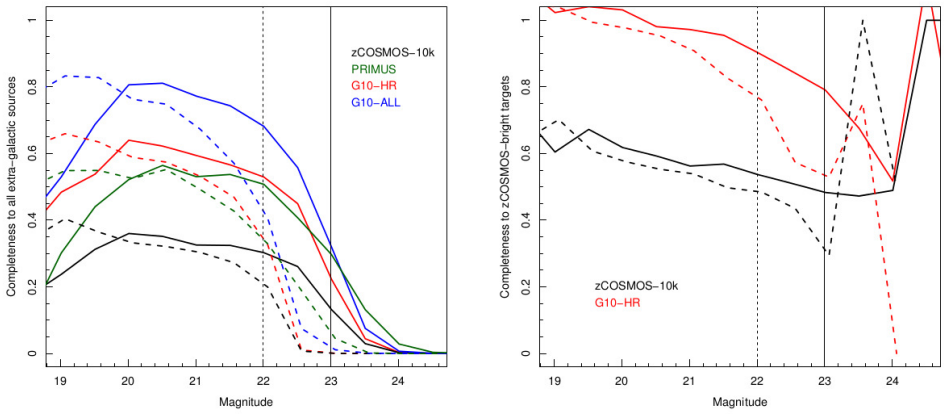

Figure 2 This figure has been taken from Figure 6 in the GAMA-10 release paper (Davies et al. 2014). The caption taken directly from the paper is: Spectroscopic completeness for the G10 region in both rband (solid lines) and i-band (dashed lines). Left: The completeness with respect to all galaxies in the field, right: the completeness of zCOSMOS-bright spectroscopic targets in the G10 region. Black line displays zCOSMOS and red line displays the G10-HR completenesses. At $r > 24$ and $i > 23$ the completeness is erratic as only a small number of sources are targeted.