Photo-z selection function

(1σ)

1. Clustering of Healpix in the Depth Maps

- 3σ mag limit (*)
- RA, DEC

} N Clusters

- Initial guess: # mag bands × 2.
- Algorithm: MiniBatch kMeans

(*) Set to 14 when no detection

2. Map photo-z and masterlist objects to their depth cluster

3. Create binary photo-z selection function

$$\text{frac} = \frac{\#\text{ sources with photo-z}}{\#\text{ sources masterlist}} \text{ per cluster} \equiv \text{Basic photo-z selection function}$$

4. Magnitude dependent photo-z selection functions

* Redshift quality criteria:

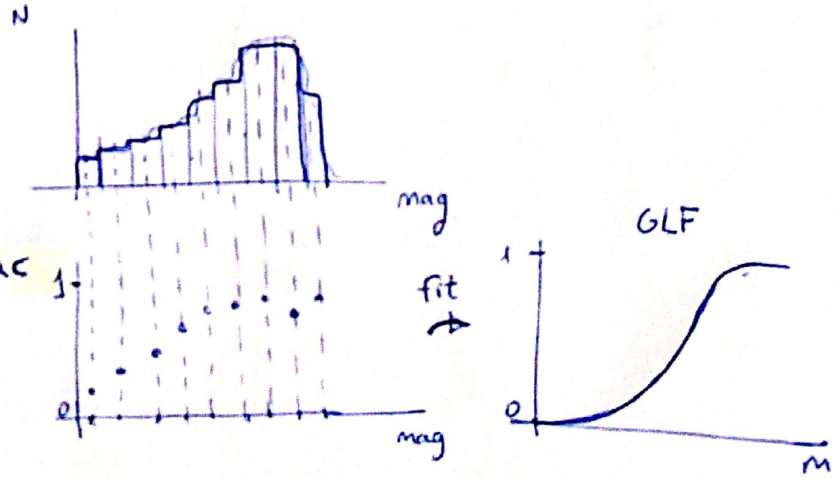
$$\frac{\Delta z_{80\%\,HPD}}{1+z_{phot}} < 0.2$$

based on information about the width of the primary and secondary peaks above the 80% HPD credible interval.

$$\Delta z_{80\%\,HPD} = 0.5 \cdot [z1\_max - z1\_min] \quad ; \quad z_{phot} = z1\_median$$

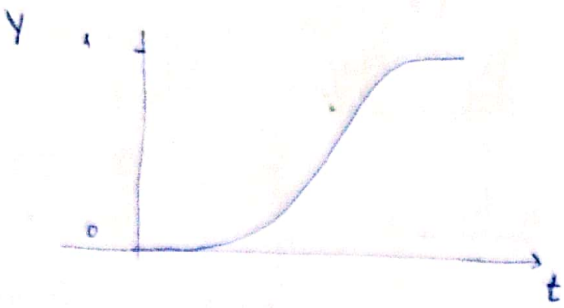
* For each magnitude:

* for each cluster:



⇒ Parameters of GLF per each cluster, per magnitude band.

Generalised Logistic Function (GLF)



$$Y(t) = A + \frac{K - A}{\left(C + Qe^{-B(t-M)}\right)^{1/\nu}}$$

A = Lower Assymptote

K = Upper Assymptote when C=1

If $\begin{cases} A=0 \\ C=1 \end{cases}$ ⇒ carrying capacity

B = Growth rate

Q = Related to Y(0)

$\nu > 0$ = affects near which assymptote max growth occurs

C is typically 1, otherwise:

$$K = A + \frac{k-A}{C^{\nu}}$$

M = time M

Parameters used / bounds

A = median(frac[:5])	(0, 1)
K = 0	(0, 1)
B = 0.9	(0, 5)
Q = 1	(0, 10)
ν = 0.4	(0, None)
C = 1	Fixed
M = iqr25_mag	(min(mag, 17), min(m999, 29))