SHAM implementations

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Vpeak scattering:

1. **Gaussian scatter:**

   Vpeak_scat = Vpeak*(1+$N(0,\sigma_2)$)

2. **positive scatter:**

   if $N(0,\sigma_2)>0$:

   Vpeak_scat = Vpeak*(1+$N(0,\sigma_2)$)

   else:

   Vpeak_scat = Vpeak*exp{$N(0,\sigma_2)$}

Vpeak_scat truncation:

a. **direct cut: in C**

   remove Vpeak_scat >Vceil

b. **dsigma cut: in C**

   remove Vpeak_scat/σ >Vceil

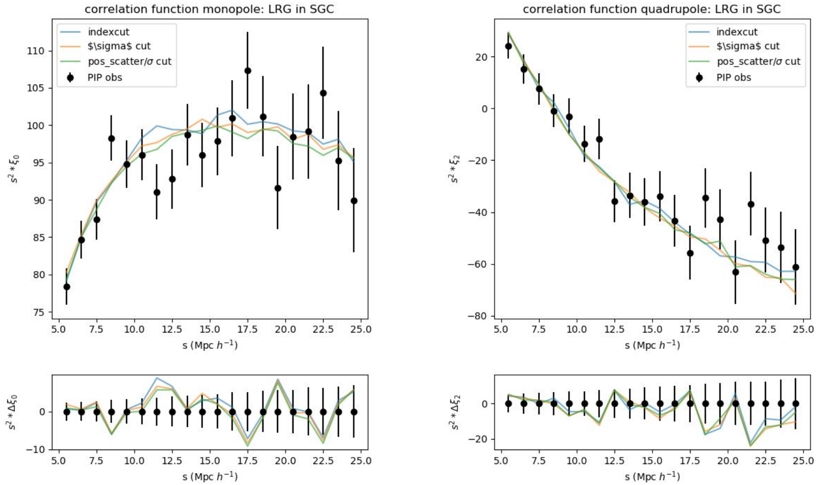
c. **index cut: in python**

   remove the largest 10^{Vceil}-th Vpeak_scat

SHAM implementations

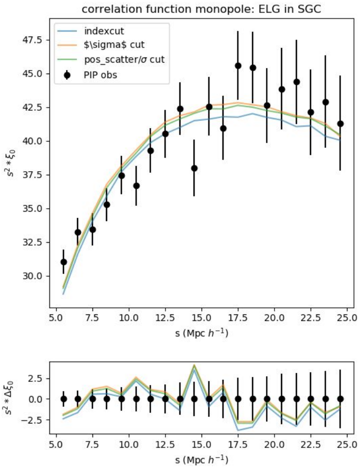
1. The result of **python** scripts is **consistent with** that of **C** code (details are in another text file)
2. despite the large difference between optimal parameters, the $\boxed{\textbf{best-fit clustering have no big difference}}$

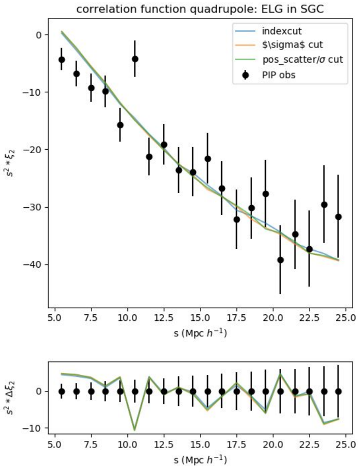
Optimal Multipoles



reduced chi2 ~ 30/37

Optimal Multipoles





reduced chi2 ~ 54/37

SHAM implementations

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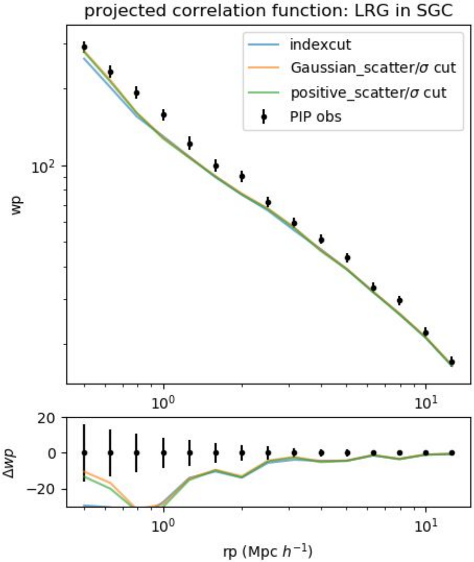
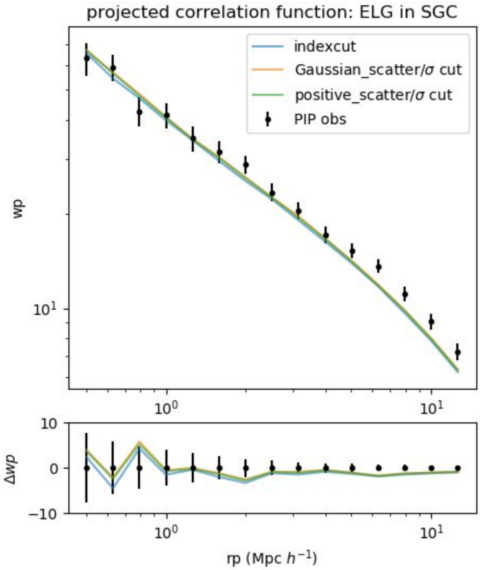
2. despite the large difference between optimal parameters, the **best-fit clustering have no big difference**
3. However, the best parameters obtained with **LRG** 2PCF multipoles **cannot reproduce wp** in the 1-halo term range

Optimal wp


projected correlation function: LRG in SGC
indexcut
Gaussian_scatter/σ cut
positive_scatter/σ cut
PIP obs
wp
10^2
10^0
10^1
Δwp
20
0
−20
rp (Mpc h^{-1})

Optimal wp



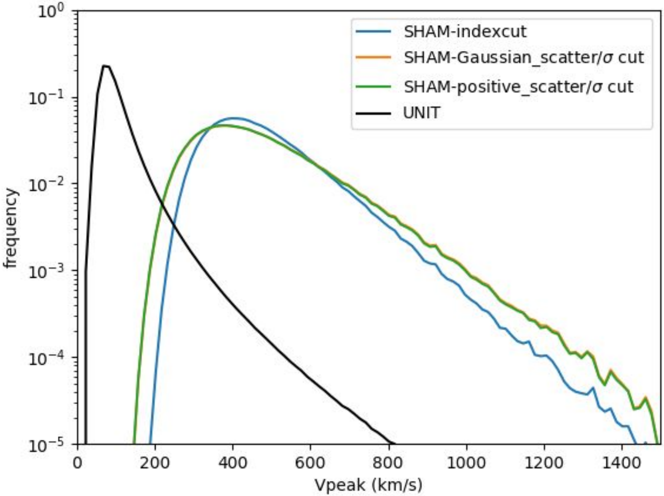
projected correlation function: ELG in SGC
indexcut
Gaussian_scatter/σ cut
positive_scatter/σ cut
PIP obs
wp
10^1
10^0
10^1
10
0
−10
Δwp
10^0
10^1
rp (Mpc h^{-1})

SHAM implementations

4. the **Vpeak distribution** and **PDF** of index-cut SHAM are **different** from the dsigma and positive-scatter-dsigma SHAM

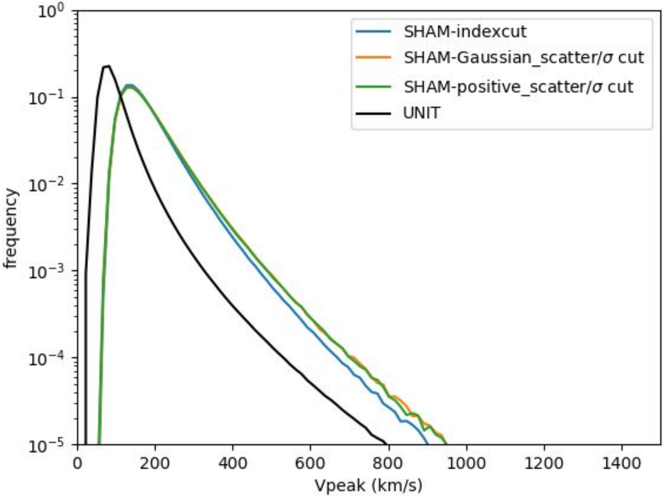
Optimal Vpeak distributions

LRG in SGC



Optimal Vpeak distributions

ELG in SGC



Optimal PDF

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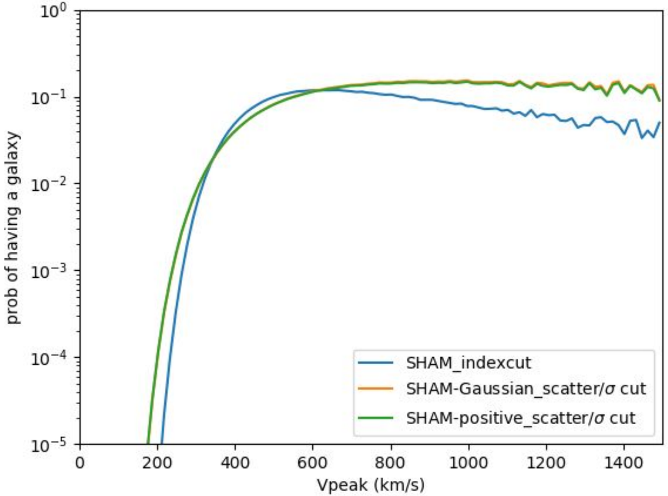
LRG in SGC



Optimal PDF

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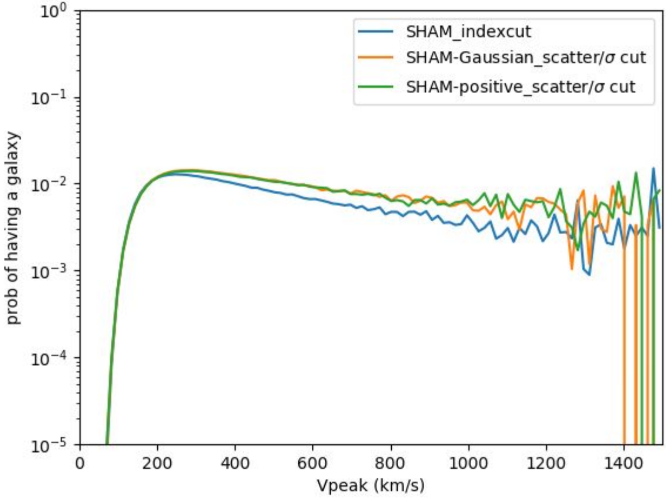
ELG in SGC



SHAM implementations

Given those results, it is not clear which implementation is good for my single-tracer SHAM.

But considering the computational resources and positive Vpeak_scatter, I’d better choose **positive-scatter dsigma-cut SHAM** for later tests