

## 1 CMASS DR11<sub>may</sub>

$$\bar{n}(z) = \left( \frac{\sum_{i \in z_{bin}} w_{sys,i}(w_{cp,i} + w_{noz,i} - 1.0)}{\sum_{i \in all} w_{sys,i}(w_{cp,i} + w_{noz,i} - 1.0)} \right) \left( \sum_{i \in all} w_{cp,i} + w_{noz,i} - 1.0 \right) \frac{1}{V_{comov}} \quad (1)$$

$$\bar{n}(z)_{norm} = \left( \frac{\sum_{i \in z_{bin}} w_{sys,i}(w_{cp,i} + w_{noz,i} - 1.0)}{\sum_{i \in all} w_{sys,i}(w_{cp,i} + w_{noz,i} - 1.0)} \right) \quad (2)$$

## 2 PTHalo $w_{BOSS}$ only

$$\bar{n}(z) = \left( \frac{\sum_{i \in z_{bin}} w_{BOSS,i}}{\sum_{i \in all} w_{BOSS,i}} \right) \left( \sum_{i \in all} w_{cp,i} + w_{red,i} - 1.0 \right) \frac{1}{V_{comov}} \quad (3)$$

$$\bar{n}(z)_{norm} = \left( \frac{\sum_{i \in z_{bin}} w_{BOSS,i}}{\sum_{i \in all} w_{BOSS,i}} \right) \quad (4)$$

## 3 PTHalo up-weighted

$$w_{PTHalo,i} = \begin{cases} w_{BOSS,i}(w_{cp,i} + w_{red,i} - 1.0), & \text{if } w_{BOSS,i}, w_{cp,i}, \text{ and } w_{red,i} > 0. \\ 0, & \text{else.} \end{cases} \quad (5)$$

$$\bar{n}(z) = \left( \frac{\sum_{i \in z_{bin}} w_{PTHalo,i}}{\sum_{i \in all} w_{PTHalo,i}} \right) \left( \sum_{i \in all} w_{cp,i} + w_{red,i} - 1.0 \right) \frac{1}{V_{comov}} \quad (6)$$

$$\bar{n}(z)_{norm} = \left( \frac{\sum_{i \in z_{bin}} w_{PTHalo,i}}{\sum_{i \in all} w_{PTHalo,i}} \right) \quad (7)$$

## 4 PTHalo Peak+ $\bar{n}(z)$ Corrected

Same weighting scheme as PTHalo up-weighted except the weights ( $w_{BOSS,i}$ ,  $w_{cp,i}$ , and  $w_{red,i}$ ) are derived from the Peak+ $\bar{n}(z)$  corrected PTHalo mock catalogs.

$$\bar{n}(z) = \left( \frac{\sum_{i \in z_{bin}} w_{PTHalo,i}}{\sum_{i \in all} w_{PTHalo,i}} \right) \left( \sum_{i \in all} w_{cp,i} + w_{red,i} - 1.0 \right) \frac{1}{V_{comov}} \quad (8)$$

$$\bar{n}(z)_{norm} = \left( \frac{\sum_{i \in z_{bin}} w_{PTHalo,i}}{\sum_{i \in all} w_{PTHalo,i}} \right) \quad (9)$$

## 5 PTHalo Random Un-corrected

$$w_{\text{rand},i} = \begin{cases} 1, & \text{if } w_{\text{BOSS},i}, w_{\text{cp},i}, \text{ and } w_{\text{red},i} > 0. \\ w_{\text{cp},i} + w_{\text{red},i} - 1.0, & \text{else.} \end{cases} \quad (10)$$

$$\bar{n}(z) = \left( \frac{\sum_{i \in z_{bin}} w_{\text{rand},i}}{\sum_{i \in \text{all}} w_{\text{rand},i}} \right) \left( \sum_{i \in \text{all}} w_{\text{cp},i} + w_{\text{red},i} - 1.0 \right) \frac{1}{V_{\text{comov}}} \quad (11)$$

$$\bar{n}(z)_{\text{norm}} = \left( \frac{\sum_{i \in z_{bin}} w_{\text{rand},i}}{\sum_{i \in \text{all}} w_{\text{rand},i}} \right) \quad (12)$$

## 6 PTHalo Random Peak+ $\bar{n}(z)$ Corrected

Same weighting scheme as PTHalo Random Un-corrected except the weights ( $w_{\text{BOSS},i}$ ,  $w_{\text{cp},i}$ , and  $w_{\text{red},i}$ ) are derived from the Peak+ $\bar{n}(z)$  corrected PTHalo random catalogs, which were generated from Peak+ $\bar{n}(z)$  Corrected PTHalo mocks.

$$\bar{n}(z) = \left( \frac{\sum_{i \in z_{bin}} w_{\text{rand},i}}{\sum_{i \in \text{all}} w_{\text{rand},i}} \right) \left( \sum_{i \in \text{all}} w_{\text{cp},i} + w_{\text{red},i} - 1.0 \right) \frac{1}{V_{\text{comov}}} \quad (13)$$

$$\bar{n}(z)_{\text{norm}} = \left( \frac{\sum_{i \in z_{bin}} w_{\text{rand},i}}{\sum_{i \in \text{all}} w_{\text{rand},i}} \right) \quad (14)$$