(1) $\xi_{11}^{(2)}(r) = \frac{DD(r)RR(r)}{DR(r)^2}$ (2) $\xi_{LS}^{(2)}(r) = 1 + \frac{1}{N_{st}^2}\frac{DD(r)}{RR(r)} - 2\frac{1}{N_{est}}\frac{DR(r)}{RR(r)}$

Se tiene que.

$\underbrace{n = \bar{n}(\delta+1)}_{(A)}$, $\underbrace{\delta = \frac{\langle w(r)\delta(r)\rangle}{\langle w(r)\rangle}}_{(B)}$, $\underbrace{\psi = \frac{\langle\langle w(r)w(r)\delta(r)\rangle\rangle}{\langle\langle w(r)w(r)\rangle\rangle}}_{(C)}$

y $\underbrace{\xi^{(2)}(r) = \frac{\langle\langle w(r)w(r)\delta(r)\delta(r)\rangle\rangle}{\langle\langle w(r)w(r)\rangle\rangle}}_{(D)}$

Para R: $R = \int w\bar{n}\,dV$

$R_1R_2 = \int \bar{n}_1 w_1 dV_1 \int \bar{n}_2 w_2 dV_2$

$R_1R_2 = \iint \bar{n}^2 w_1 w_2\, dV_1 dV_2$

$= \bar{n}^2 \langle\langle w_1 w_2\rangle\rangle$

Para D: $D = \int wn\,dV$

$D_1D_2 = \int n_1 w_1 dV_1 \int n_2 w_2 dV_2$ Usando (A)

$D_1D_2 = \iint \bar{n}^2(\delta_1+1)(\delta_2+1) w_1 w_2\, dV_1 dV_2$

Usando (C), (D)

$D_1D_2 = \iint \bar{n}^2[\delta_1\delta_2 + \delta_1 + \delta_2 + 1] w_1 w_2\, dV_1 dV_2$

$D_1D_2 = \bar{n}^2 \iint [\delta_1\delta_2 w_1 w_2 + \delta_1 w_1 w_2 + \delta_2 w_1 w_2 + w_1 w_2]\, dV_1 dV_2$

$D_1D_2 = \bar{n}^2 \left[\xi^{(2)}\langle\langle w_1 w_2\rangle\rangle + \psi_1\langle\langle w_1 w_2\rangle\rangle + \psi_2\langle\langle w_1 w_2\rangle\rangle + \langle\langle w_1 w_2\rangle\rangle\right]$

Para D y R: $D = \int w n \, dV$, $R = \int w \bar{n} \, dV$

$$D_1 R_1 = \int w_1 n_1 \, dV_1 \int w_1 \bar{n}_1 \, dV_1$$
$$= \int w_1 w_1 n_1 \bar{n} \, dV_1$$
$$= \int w_1 w_1 \bar{n}^2 (\delta_1 + 1) \, dV_1 = \int \bar{n}^2 w_1^2 (\delta_1 + 1) \, dV_1$$
$$= \int \bar{n}^2 w_1^2 \delta_1 \, dV_1 + \int \bar{n}^2 w_1^2 \, dV_1$$
$$= \psi_1 \langle\langle w_1 w_1 \rangle\rangle \bar{n}^2 + \bar{n}^2 \langle\langle w_1 W_1 \rangle\rangle$$

y $N_{est} = 1 + \bar{\delta}$

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(1) • Para: $\xi_H^{(2)}(r) = \dfrac{DD \; RR}{DR}$

$$\xi_H^{(2)} = \frac{\bar{n}^2 \left[\langle\langle W_1 w_2 \rangle\rangle + \psi_1 \langle\langle w_1 w_2 \rangle\rangle + \psi_2 \langle\langle w_1 W_2 \rangle\rangle + \xi^{(2)} \langle\langle w_1 W_2 \rangle\rangle \right] \bar{n}^2 \langle\langle w_1 w_2 \rangle\rangle}{\bar{n}^2 (1 + \psi_1) \langle\langle w_1 w_1 \rangle\rangle}$$

(2) • Para: $\xi_{LZ}^{(2)}(r) = 1 + \dfrac{1}{N_{est}^2} \dfrac{DD(r)}{RR(r)} - 2 \dfrac{1}{N_{est}} \dfrac{DR(r)}{RR(r)}$

$$\frac{1}{N_{est}^2} \frac{DD}{RR} = \frac{1}{(1+\bar{\delta})^2} \left[\frac{\bar{n}^2 \left(\langle\langle w_1 w_2 \rangle\rangle + \psi_1 \langle\langle w_1 w_2 \rangle\rangle + \psi_2 \langle\langle w_1 w_2 \rangle\rangle + \xi^{(2)} \langle\langle w_1 w_2 \rangle\rangle \right)}{\bar{n}^2 \langle\langle w_1 w_2 \rangle\rangle} \right]$$

$$= \frac{1}{(1+\bar{\delta})^2} \left[1 + \psi_1 + \psi_2 + \xi^{(2)} \right]$$

$$\frac{-2}{N_{est}} \frac{DR(r)}{RR(r)} = \left[\frac{\psi_1 \langle\langle w_1 w_1 \rangle\rangle \bar{n}^2 + \bar{n}^2 \langle\langle w_1 W_1 \rangle\rangle}{\bar{n}^2 \langle\langle w_1 W_2 \rangle\rangle} \right] \left(\frac{-2}{1+\bar{\delta}} \right)$$

$$\xi_{LZ}^{(2)} = 1 + \frac{1}{(1+\bar{\delta})^2} \left[1 + \psi_1 + \psi_2 + \xi^{(2)} \right] + \left[\frac{\psi_1 \langle\langle w_1 W_1 \rangle\rangle + \langle\langle W_1 w_1 \rangle\rangle}{\bar{n}^2 \langle\langle W_1 W_2 \rangle\rangle} \right] \left(\frac{-2}{1+\bar{\delta}} \right)$$