

$$P_{\text{dir}}(k) = 2\pi \int_0^{R_{\text{max}}} \left[(1 - A_P f_{\Psi}(R)) e^{-\chi^2 f_{\Phi}(R)} - (1 - A_P) e^{-\chi^2} \right] J_0(kR) R dR$$

