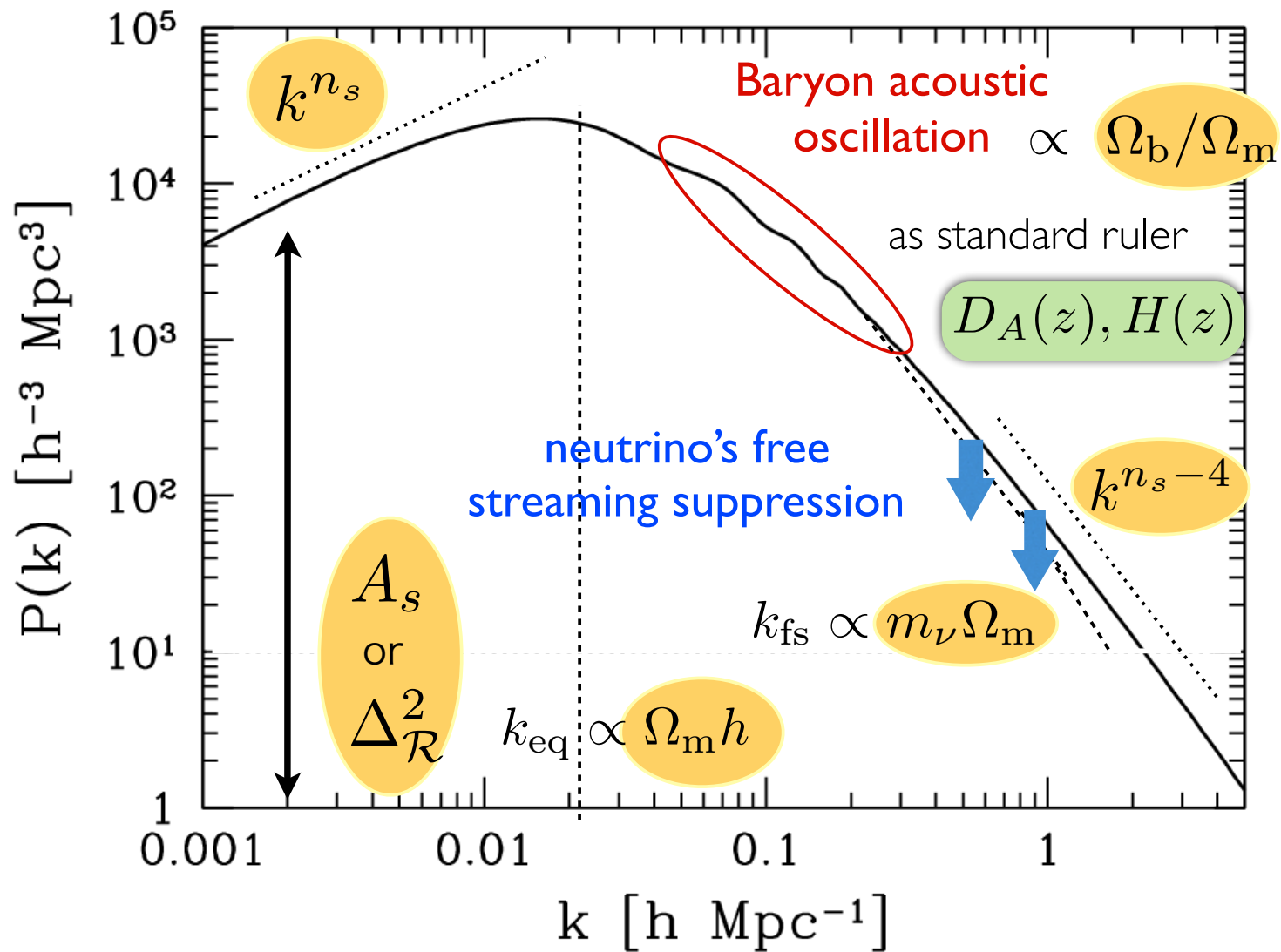


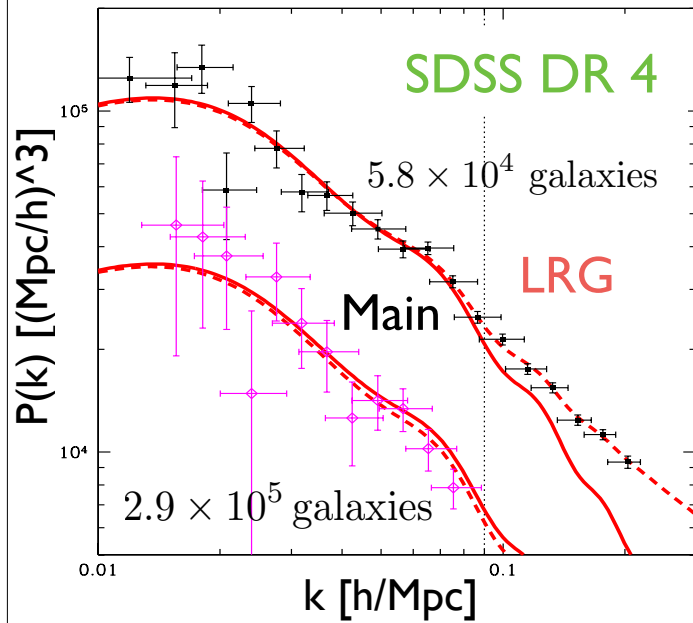
Linear theory of structure formation

(Linear) matter power spectrum

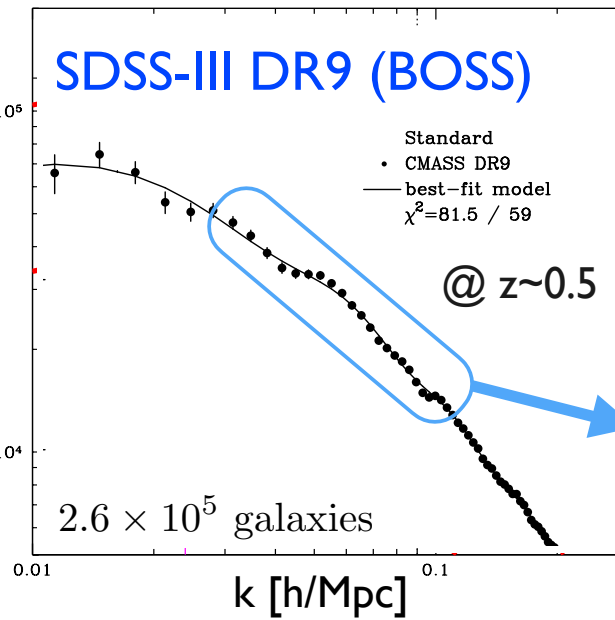


Galaxy power spectrum

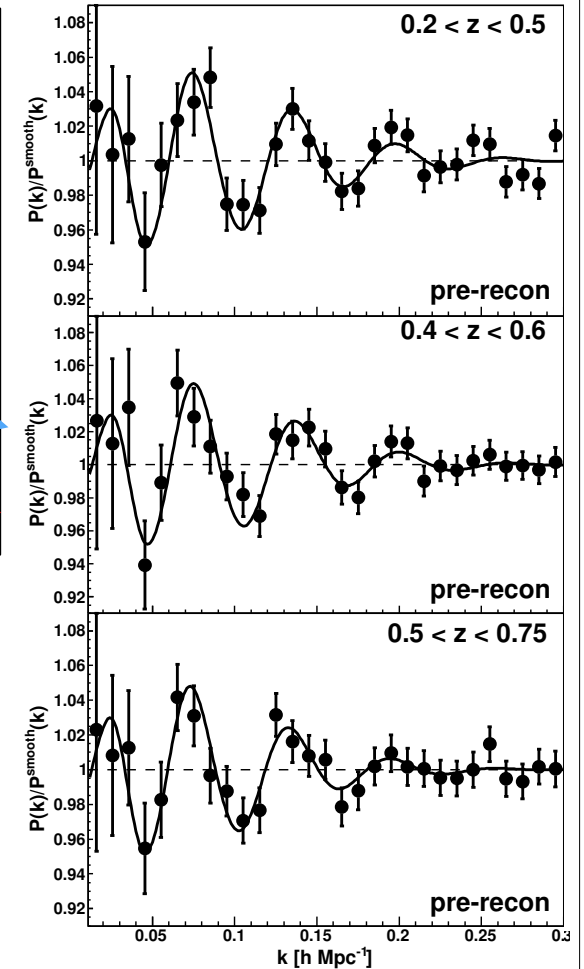
Tegmark et al. ('06)



Anderson et al. ('12)



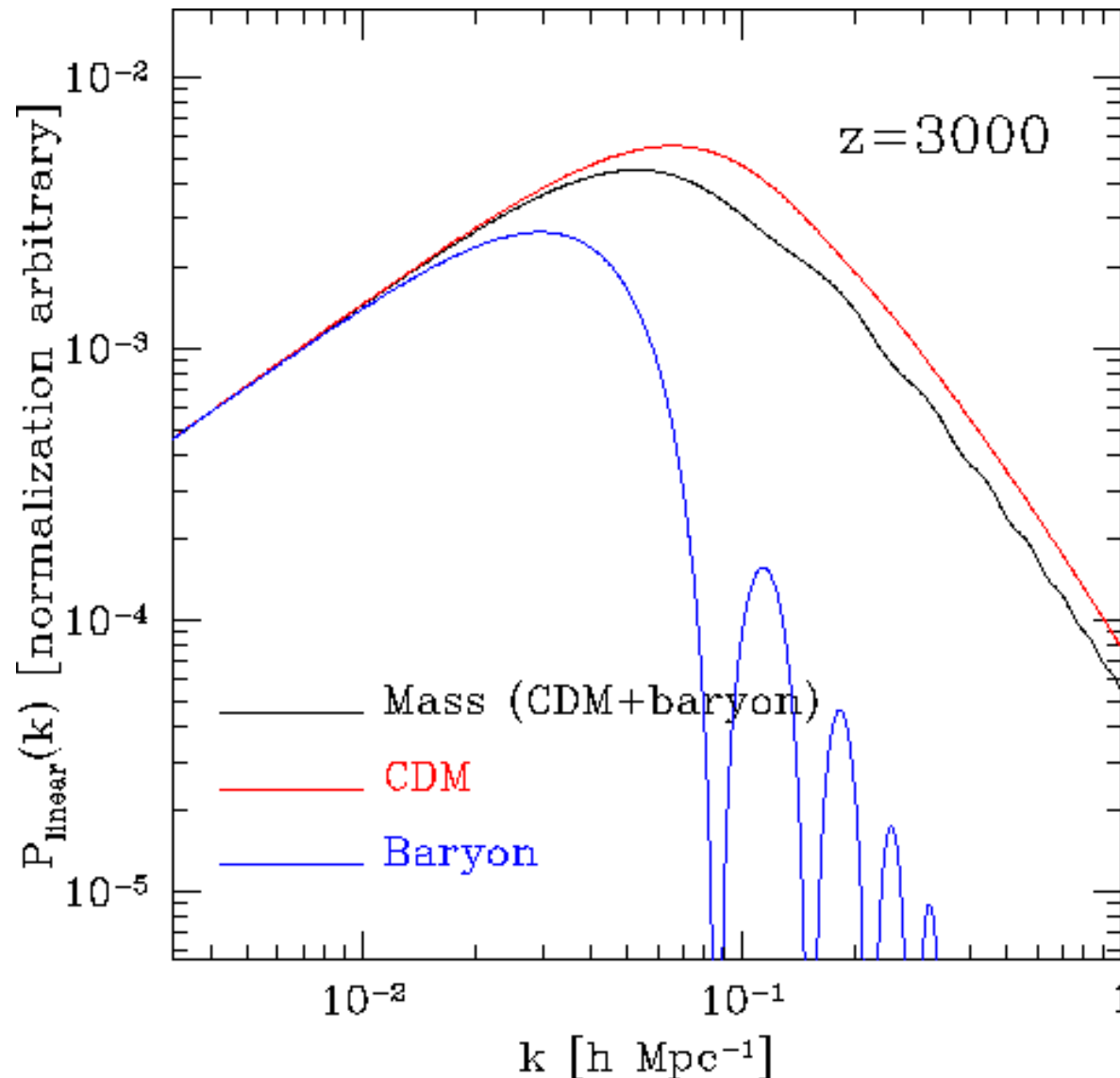
Beutler et al. ('16)



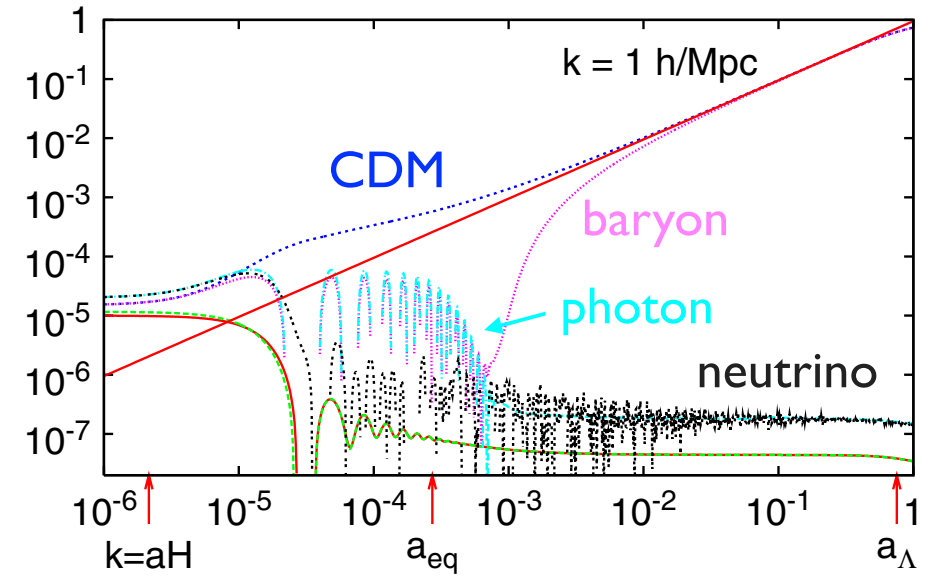
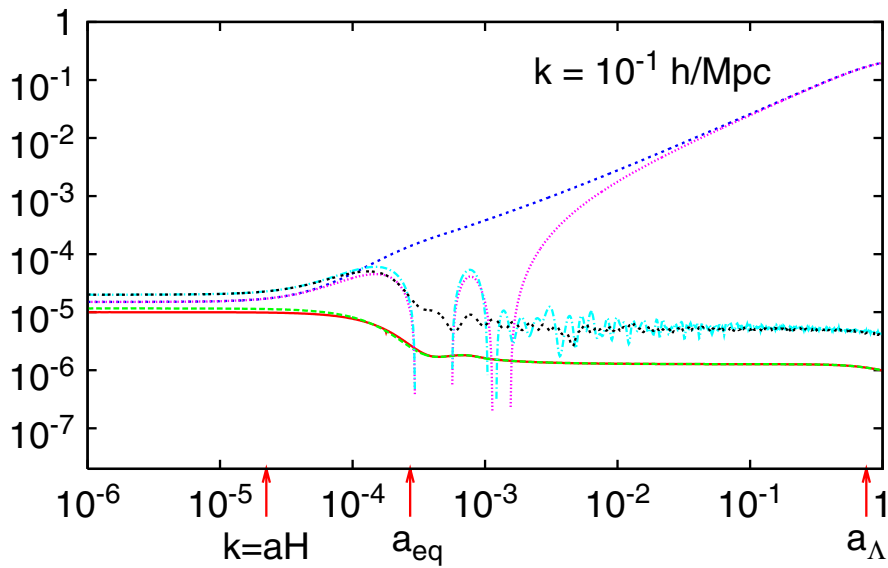
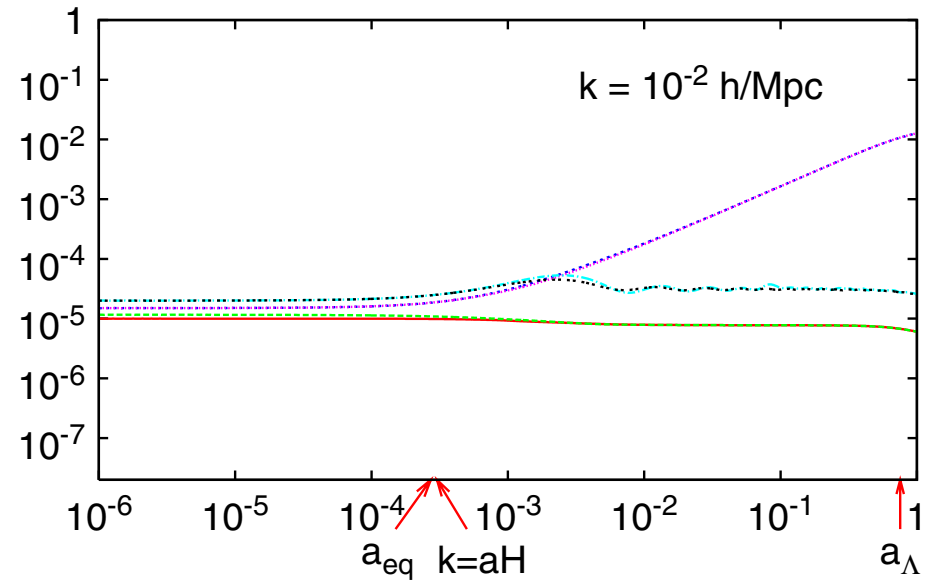
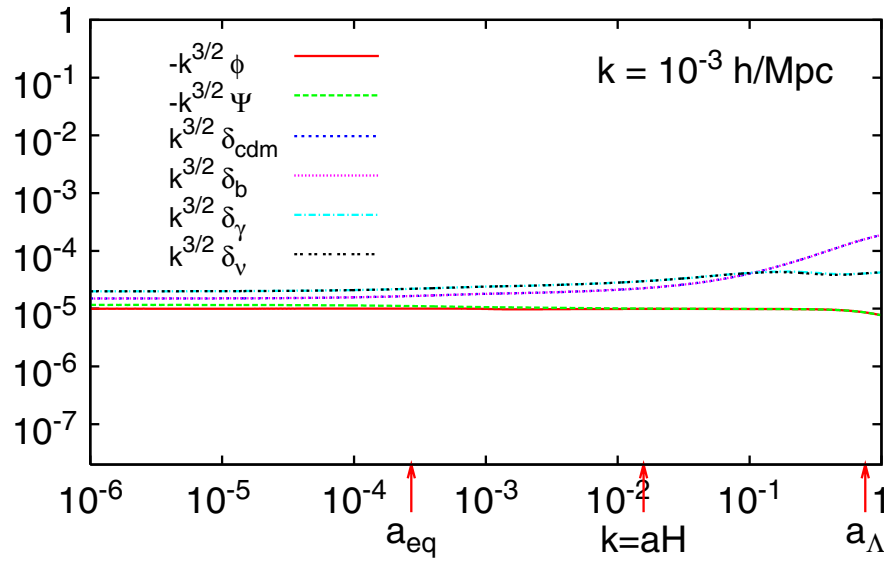
SDSS-III DR12 (BOSS)

1.2 × 10⁶ galaxies

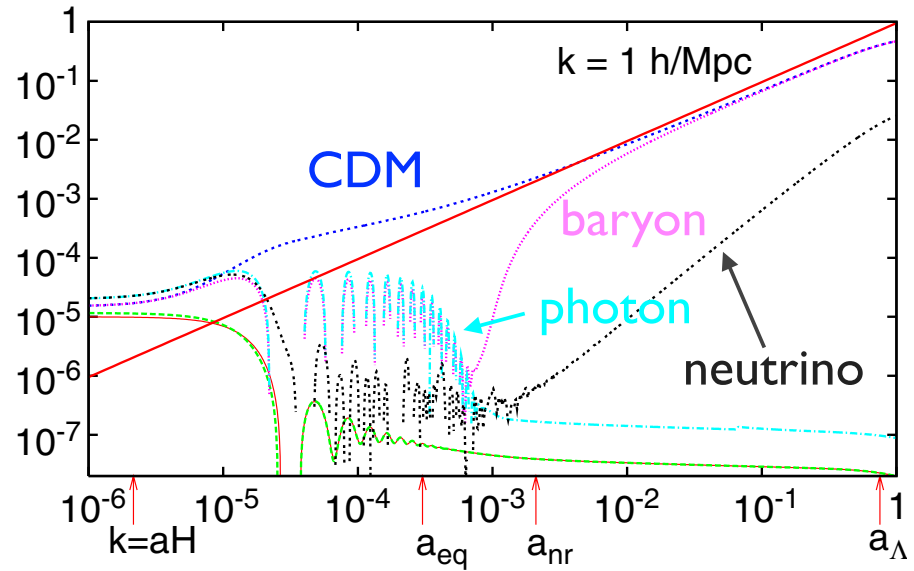
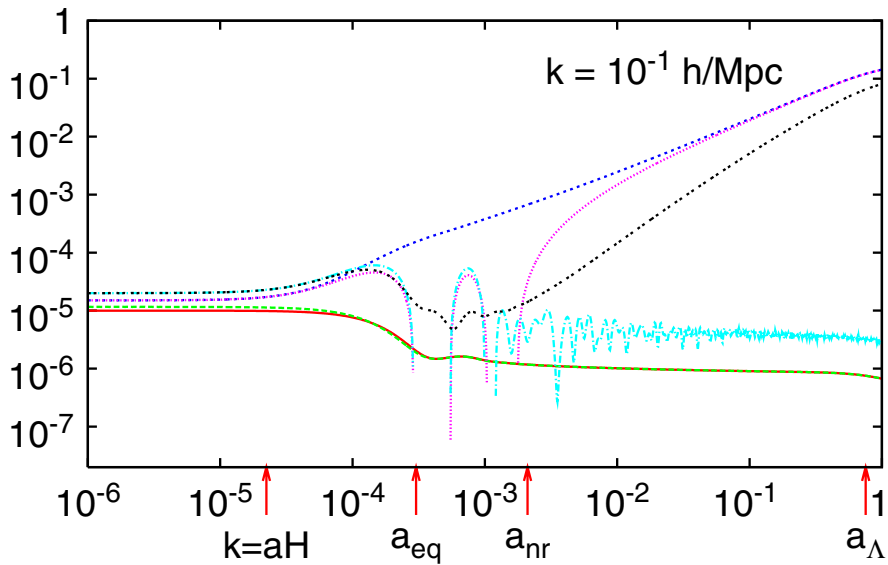
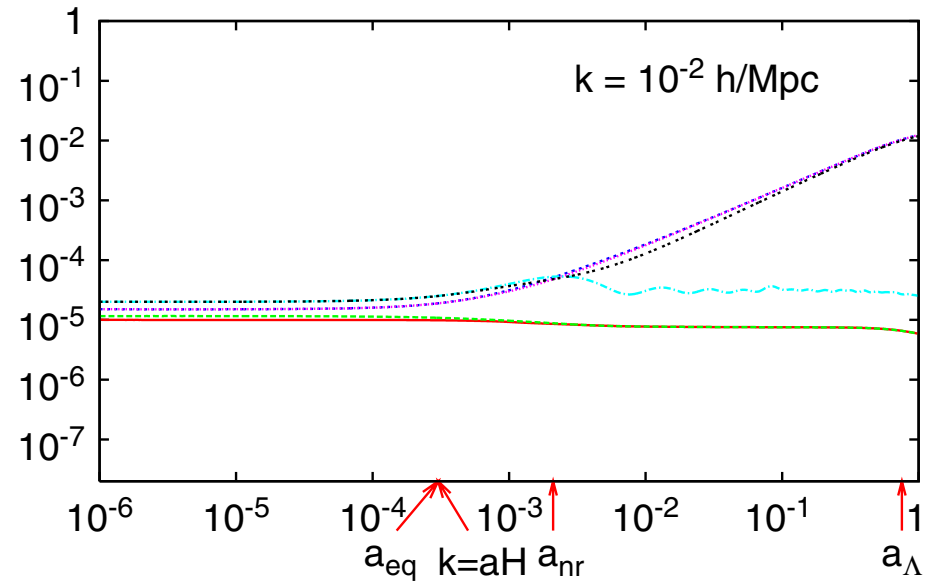
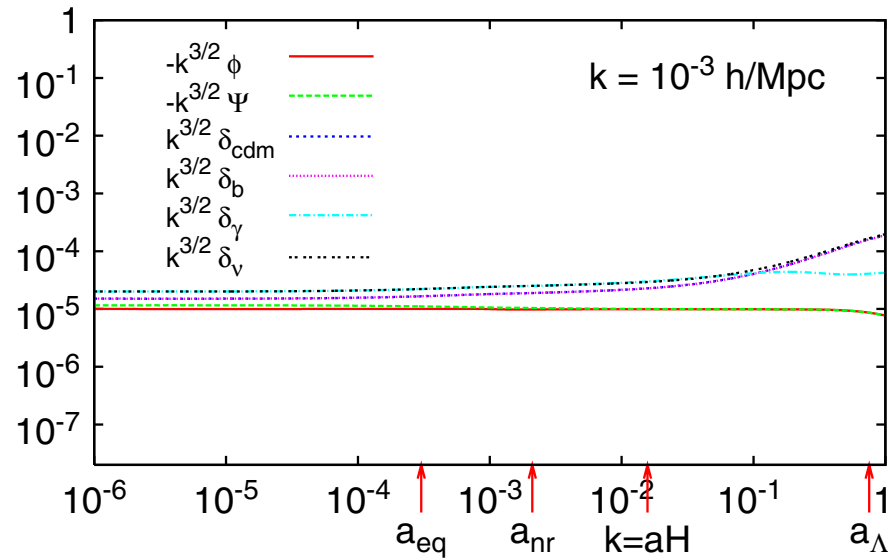
Evolution of power spectrum



Λ CDM (massless neutrino)



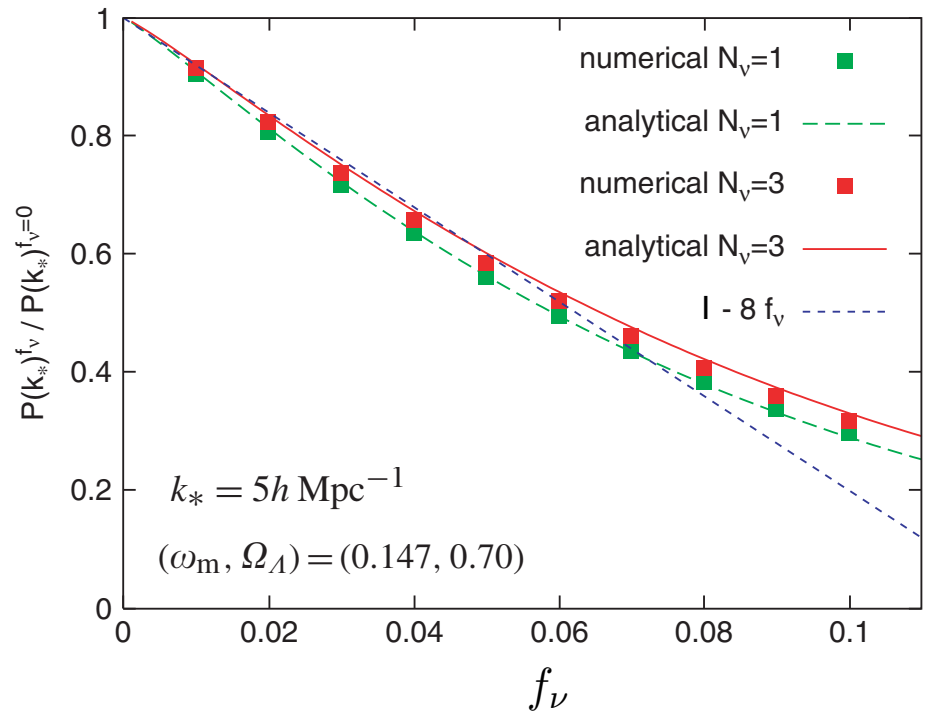
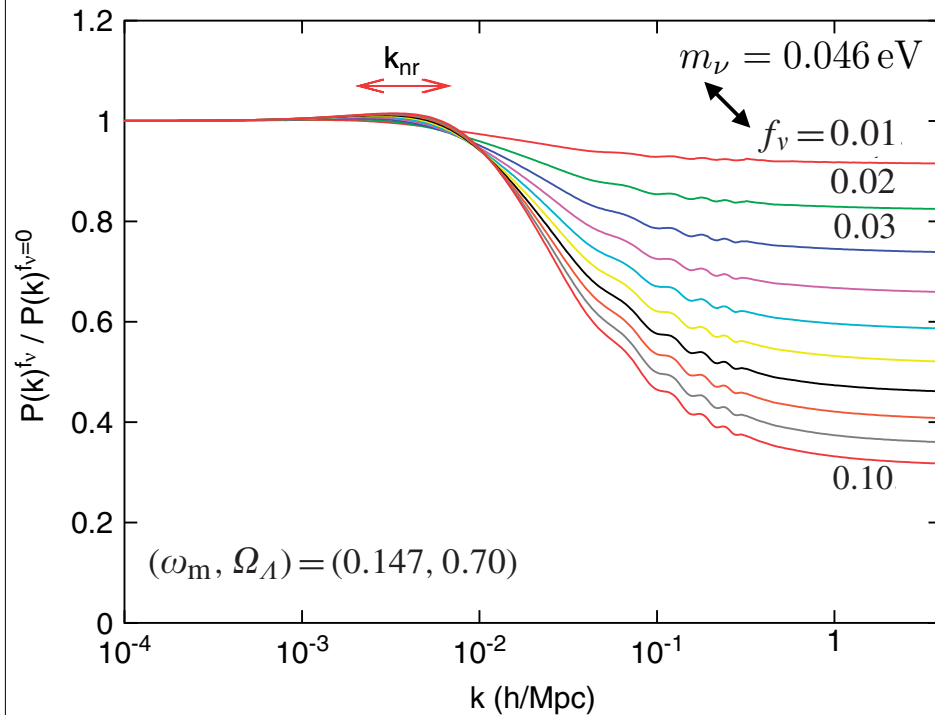
Λ CDM (massive neutrino) ($f_\nu = 0.1$)



ν 's free-streaming suppression

$$k_{\text{FS}} = \frac{0.677}{(1+z)^2} \frac{m_\nu}{1 \text{ eV}} \sqrt{\Omega_{\text{m},0}(1+z)^3 + \Omega_\Lambda} h \text{ Mpc}^{-1}$$

$$\frac{P(k)|_{f_\nu \neq 0}}{P(k)|_{f_\nu = 0}} = (1 - f_\nu)^3 \left\{ 1.9 \times 10^5 \frac{\Omega_{\nu,0} h^2}{N_{\text{eff}}} \frac{D_1(a)}{a} \right\}^{-(6/5)f_\nu}$$



Lesgourgues & Pastor,
Phys.Rep. 429 ('06) 307

Impact on large-scale structure

