Structure formation in ΛeDM universe

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ΛeDM model - solving σ_8 and H_0 tensions simultaneously

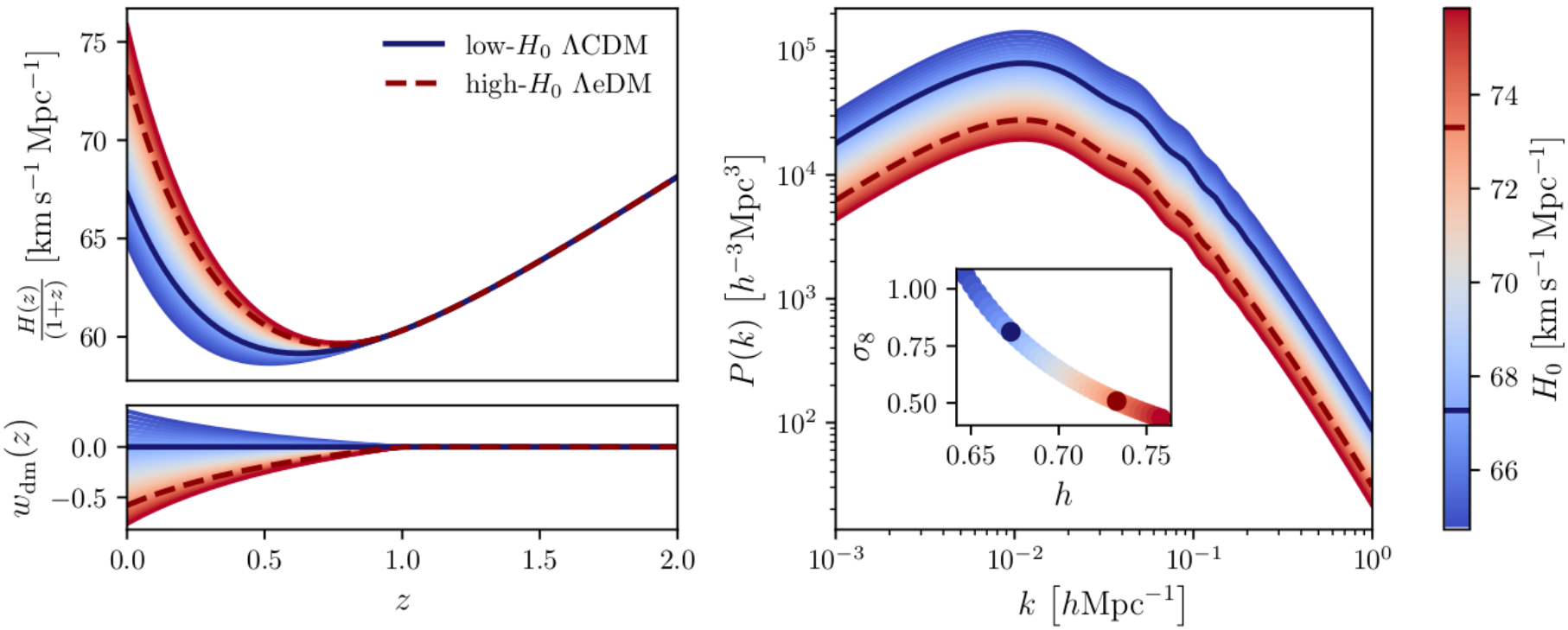
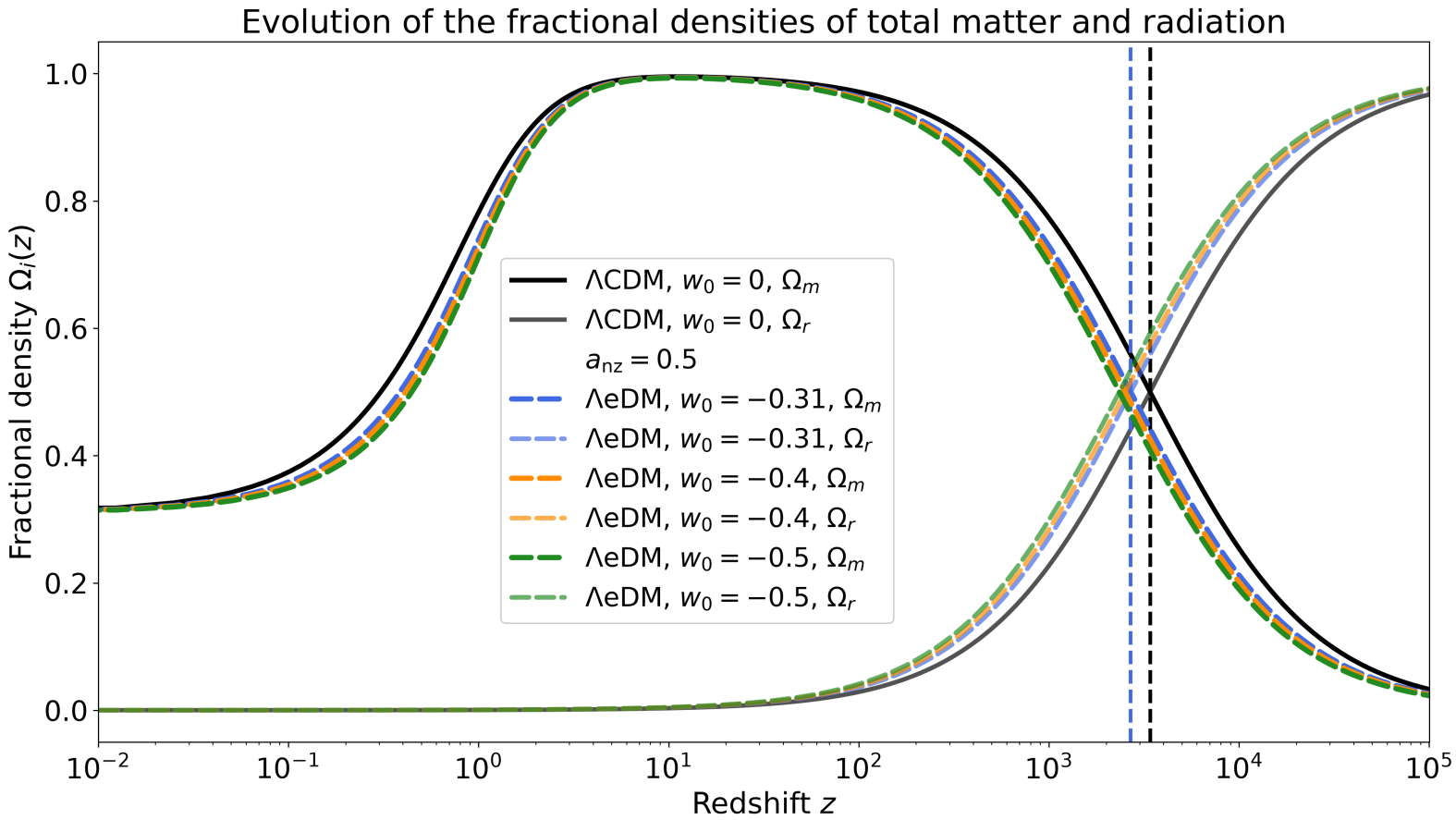


Figure: The Hubble function H(z), dark matter EoS w_{dm}(z) and power spectrum P(k) for ΛeDM and ΛCDM model.

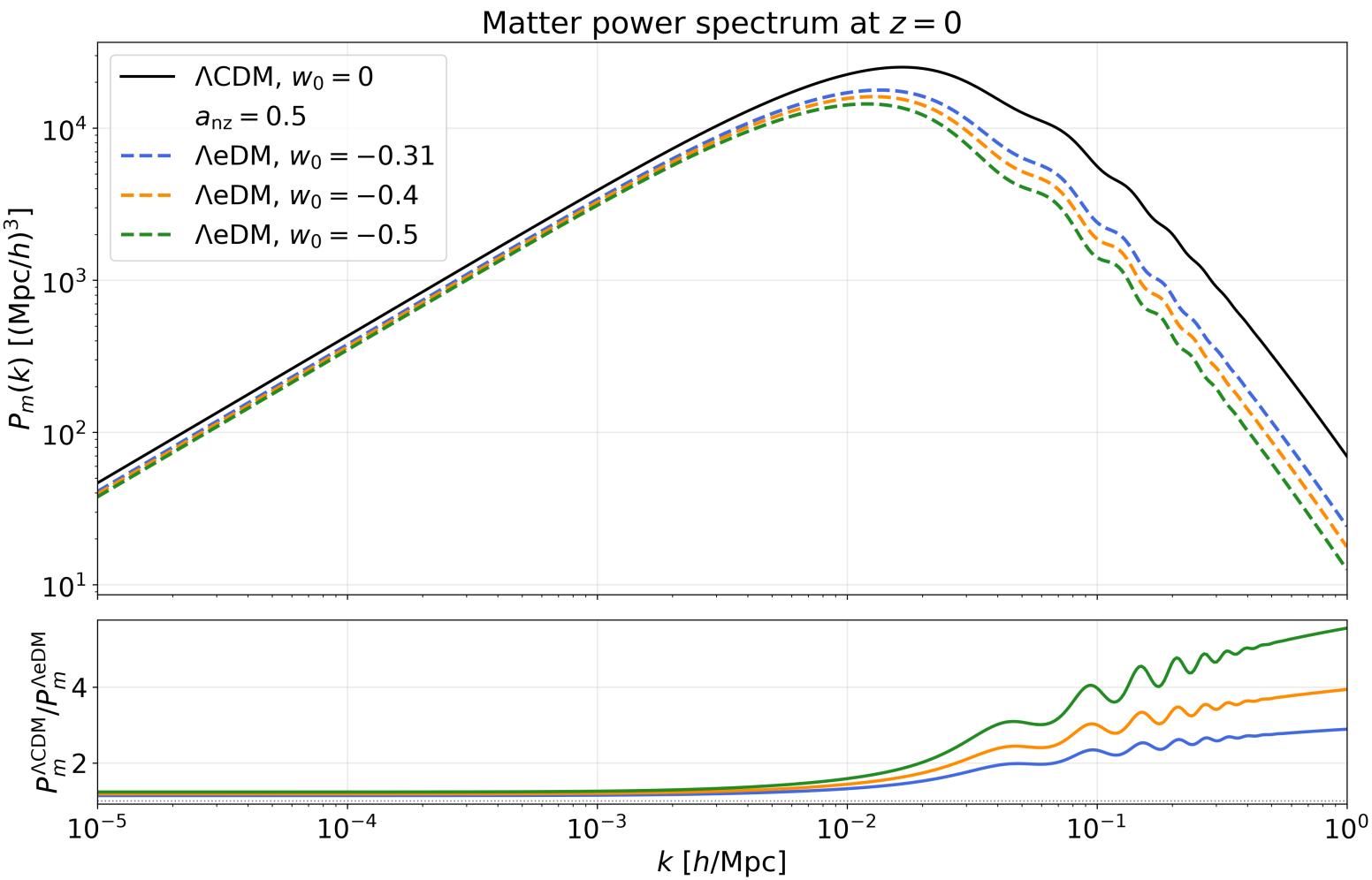
$$w_{edm}(a) = \begin{cases} \frac{w_{edm,0}(a-a_{nz})}{1-a_{nz}} & a \geq a_{nz} \\ 0 & a < a_{nz} \end{cases}$$

Matter - radiation equality in ΛeDM universe



The ΛeDM model predicts a lower matter–radiation equality redshift: $z_{\rm eq} \approx 2693$ ($w_0 = -0.31$, $a_{\rm nz} = 0.5$), compared to $z_{\rm eq} \approx 3406$ in ΛCDM.

Matter power spectrum



The ΛeDM model predicts a suppression of the matter power spectrum relative to ΛCDM, with the largest deviations occurring on small scales.

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Transfer function

