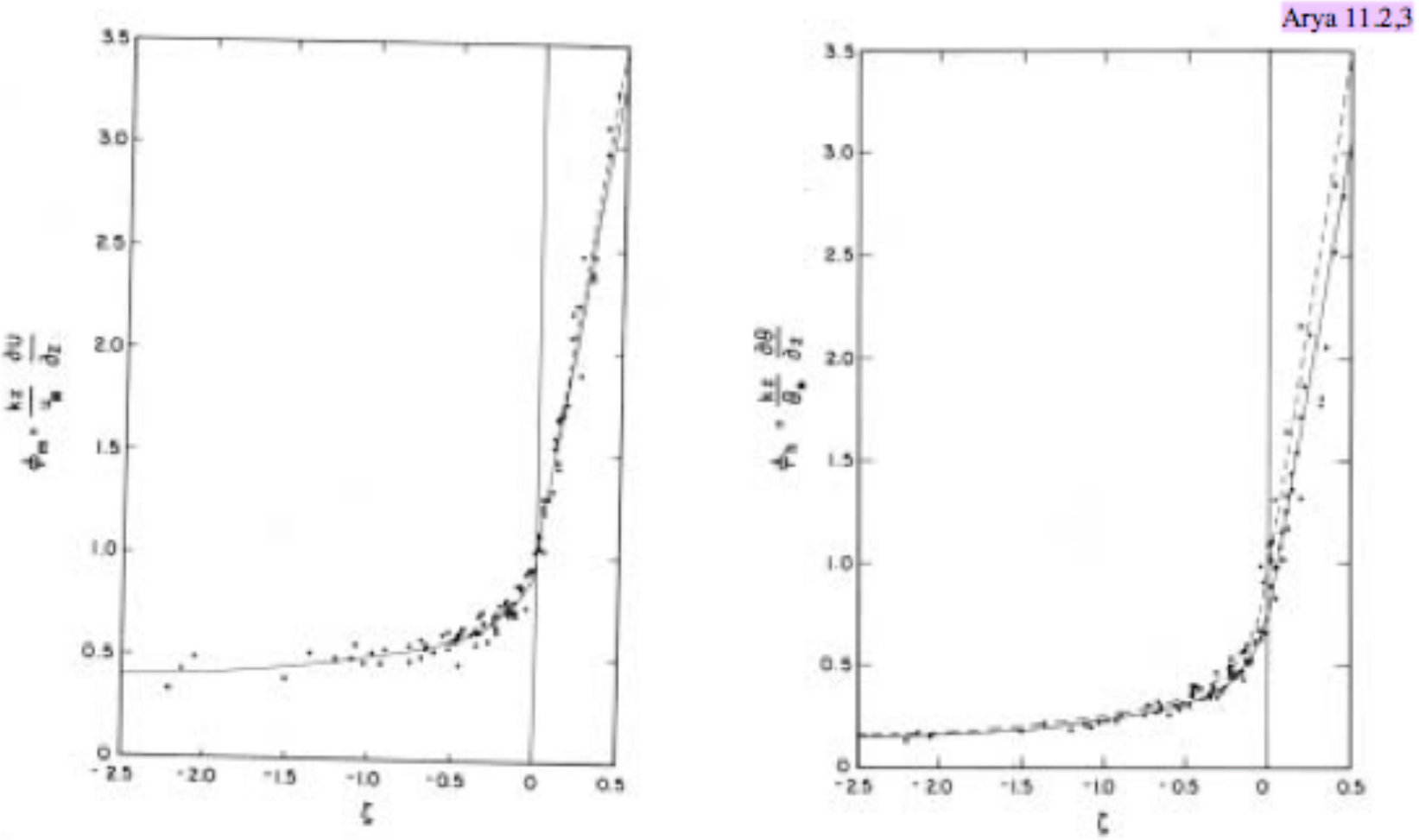
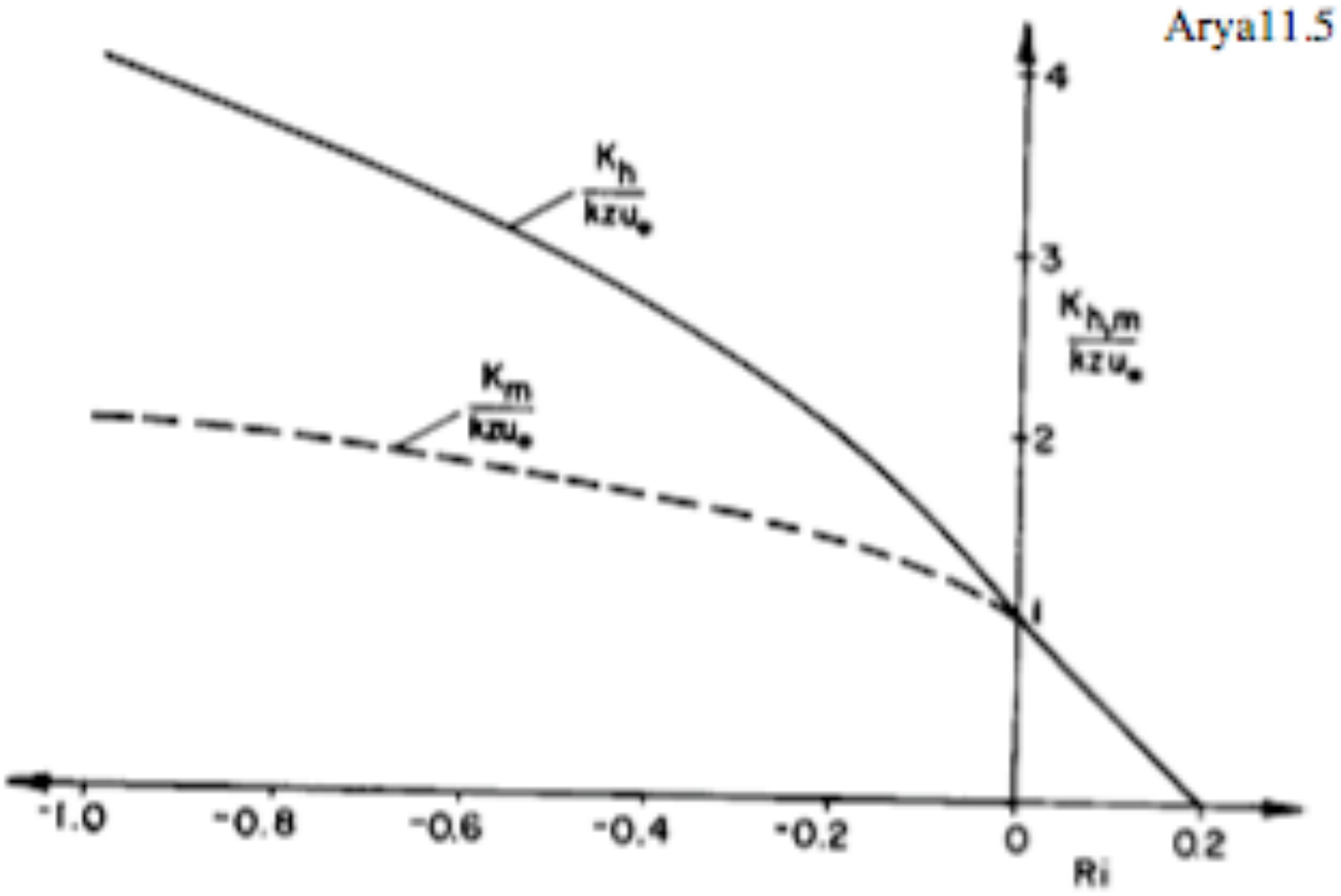
Stability functions inferred from Kansas experiment



$K_{m,h}$ vs. stability



Wind profiles vs. stability

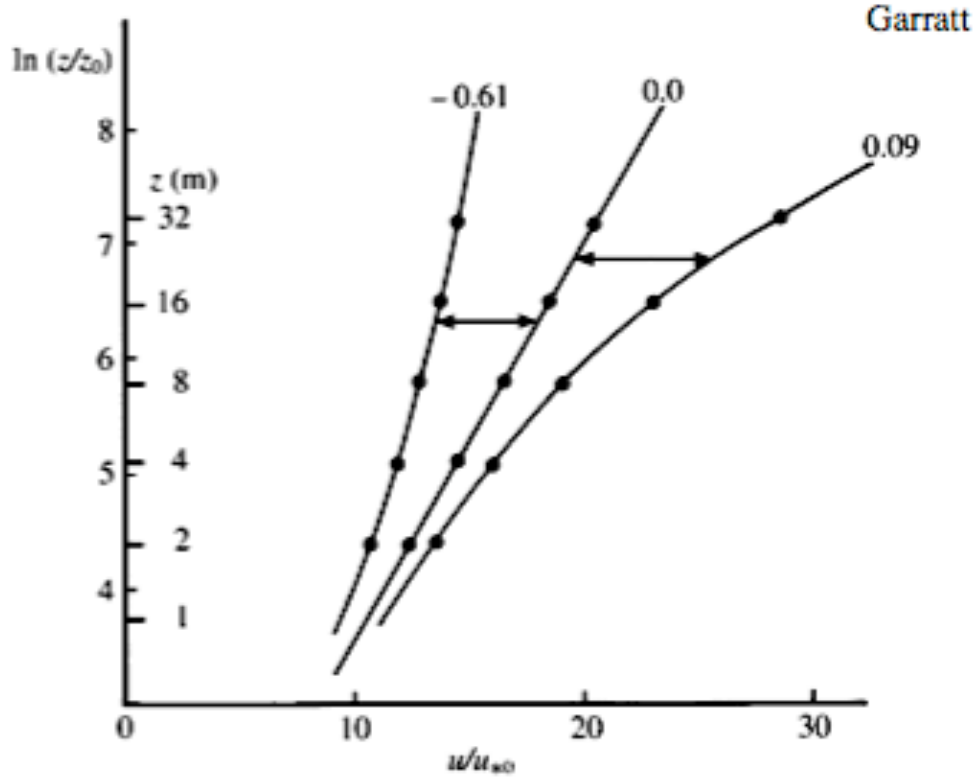


Fig. 3.5 Three wind profiles from the Kansas field data (Izumi, 1971) plotted in normalized form at three values of the gradient Ri ($z = 5.66$ m). Both normalized and absolute heights are shown, whilst the magnitude of the horizontal arrows indicates the effect of buoyancy on the wind relative to the neutral profile (see Eq. 3.34).

Stability correction to transfer coefficients

Garratt

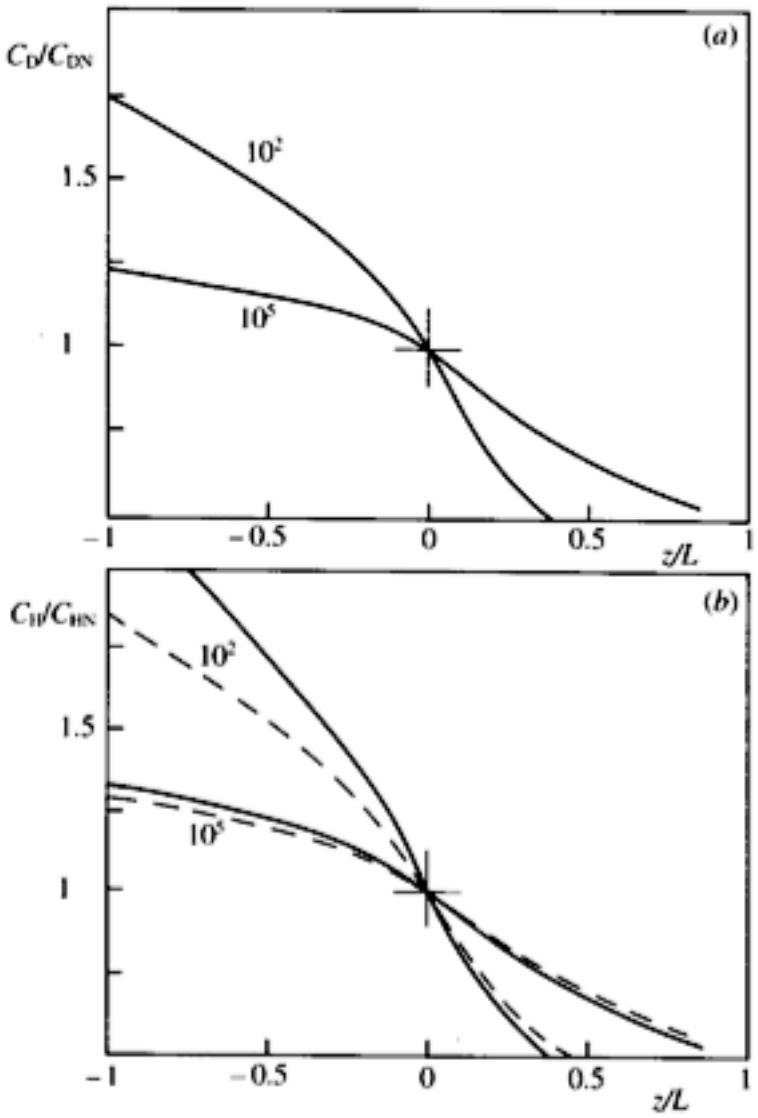
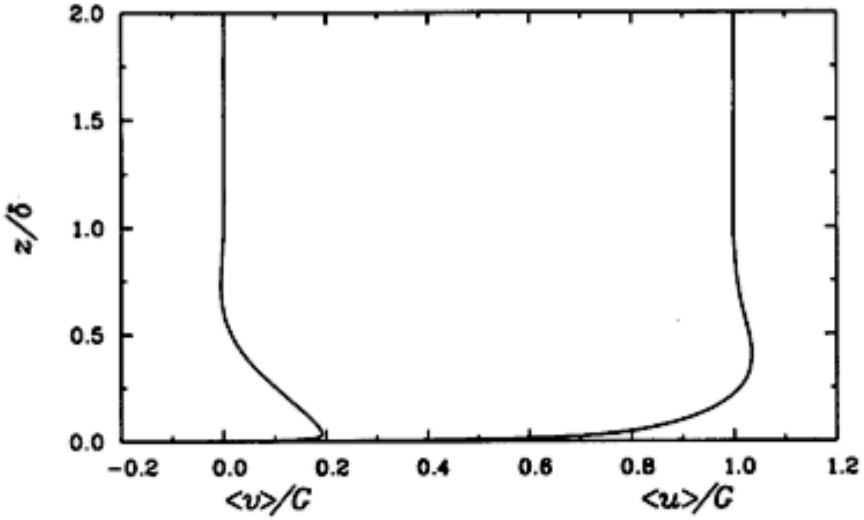
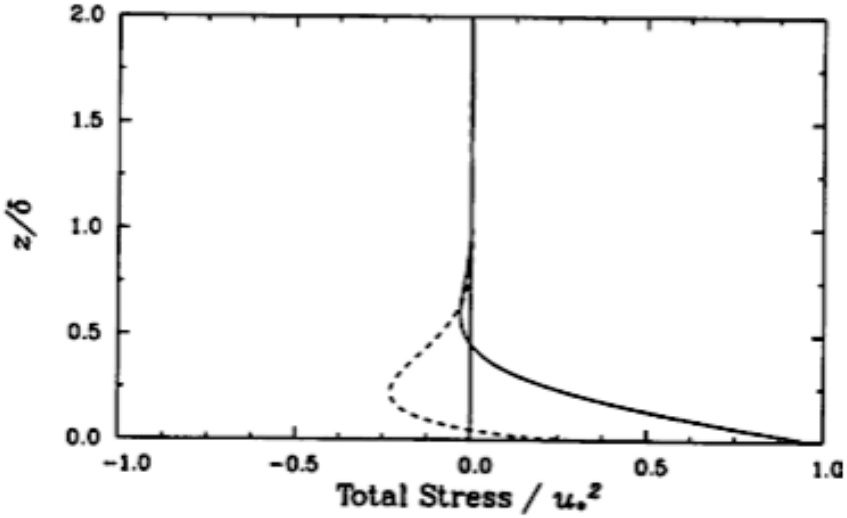


Fig. 3.7 Values of (*a*) C_D/C_{DN} and (*b*) C_H/C_{HN} as functions of z/L for two values of z/z_0 as indicated. In (*b*), the solid curves have $z_0 = z_T$, and the pecked curves have $z_0/z_T = 7.4$ (see Chapter 4).

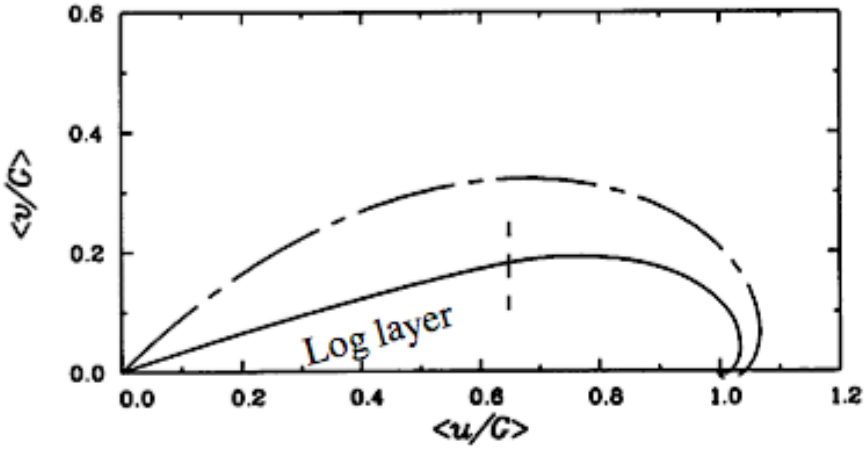
Neutral Barotropic Turbulent Ekman Layer



Wind profiles in a neutral barotropic BL with $u_*/G = 0.053$ (Coleman 1999).



Stress profiles in geostrophic coordinate system. Solid = in direction of $\mathbf{u}_g$, dashed = transverse dir.



Wind hodograph (dashed = Ekman layer). Log (surface) layer is part of profile to right of dashes.