



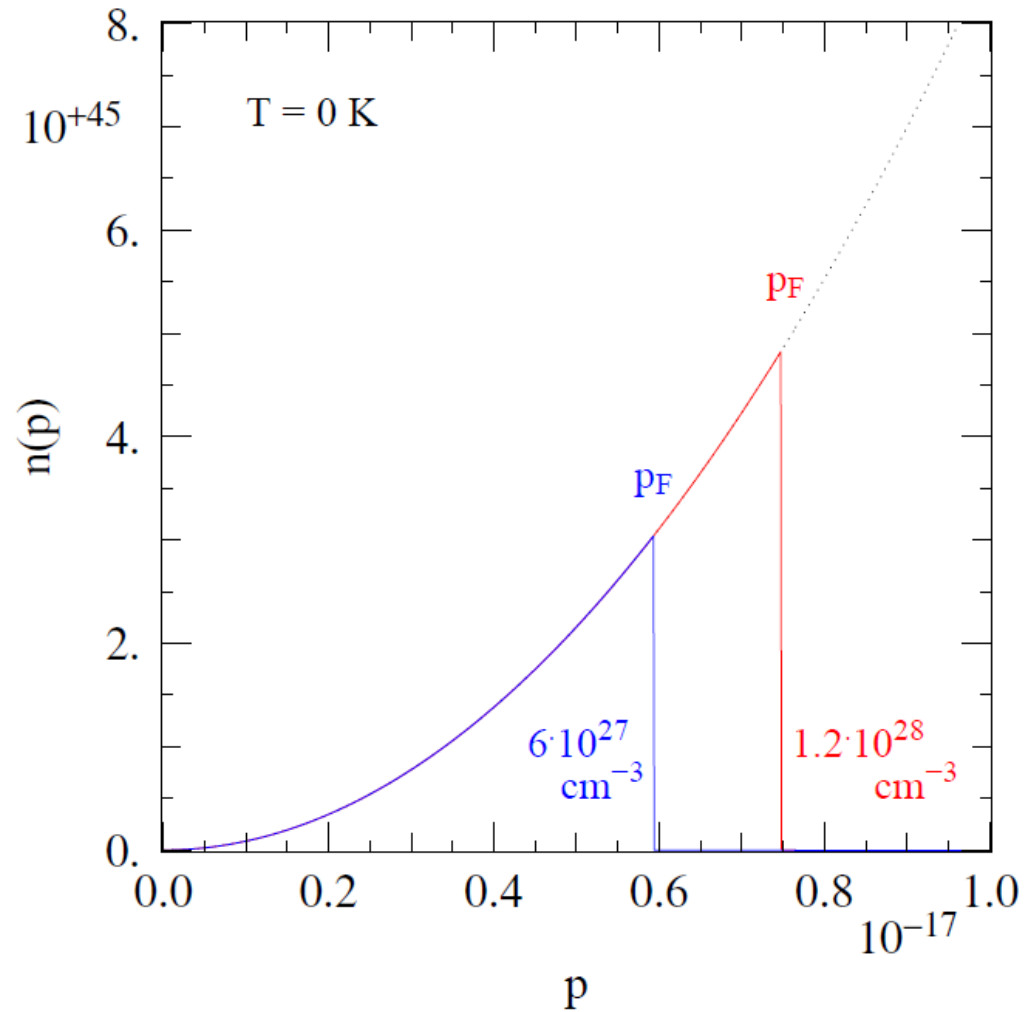
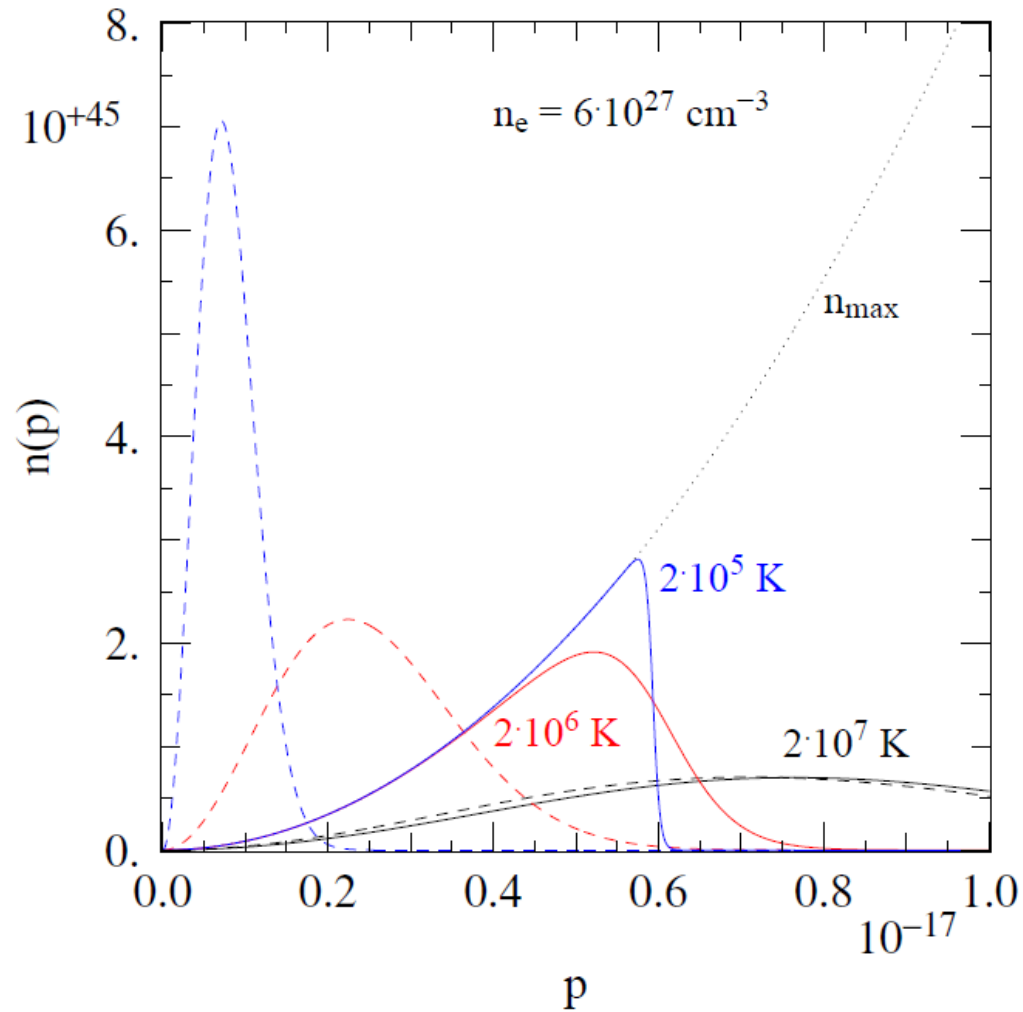
Stellar Evolution  
Course

L3: EOS

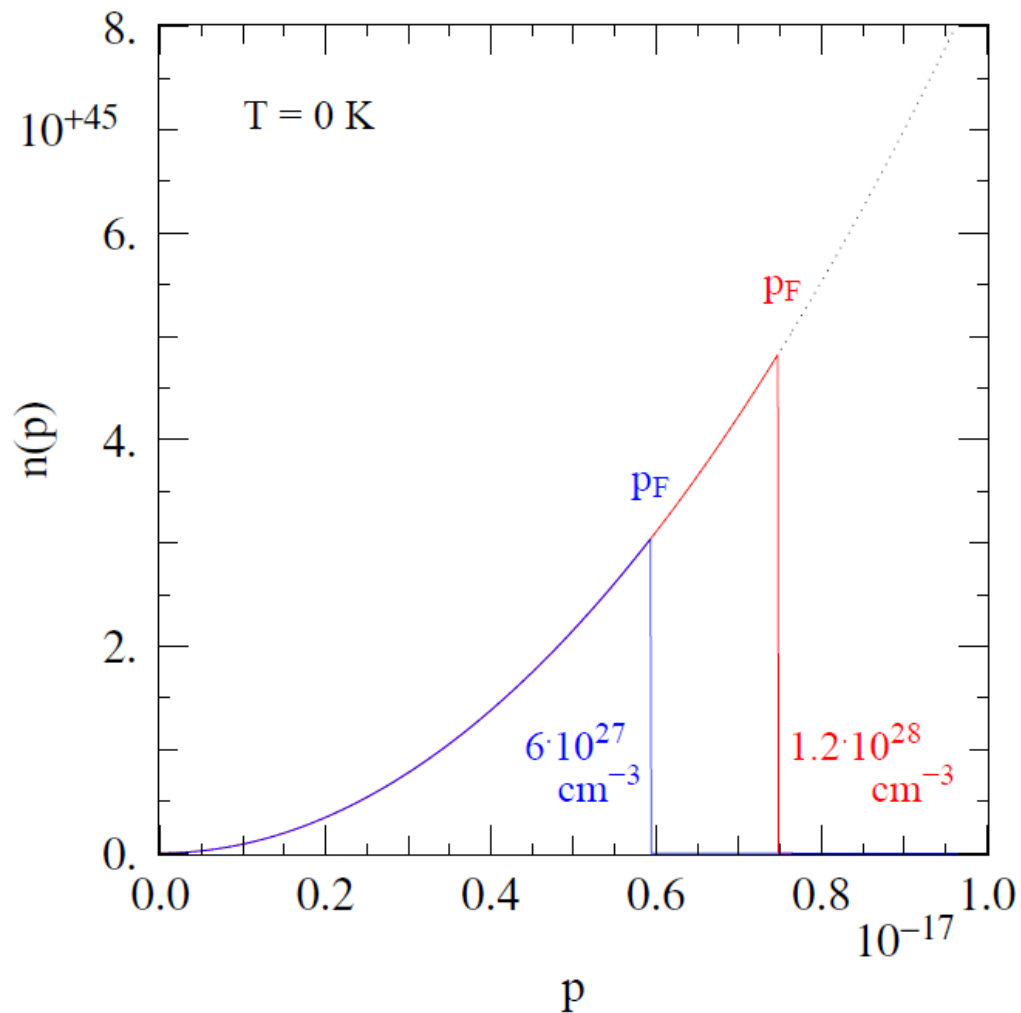
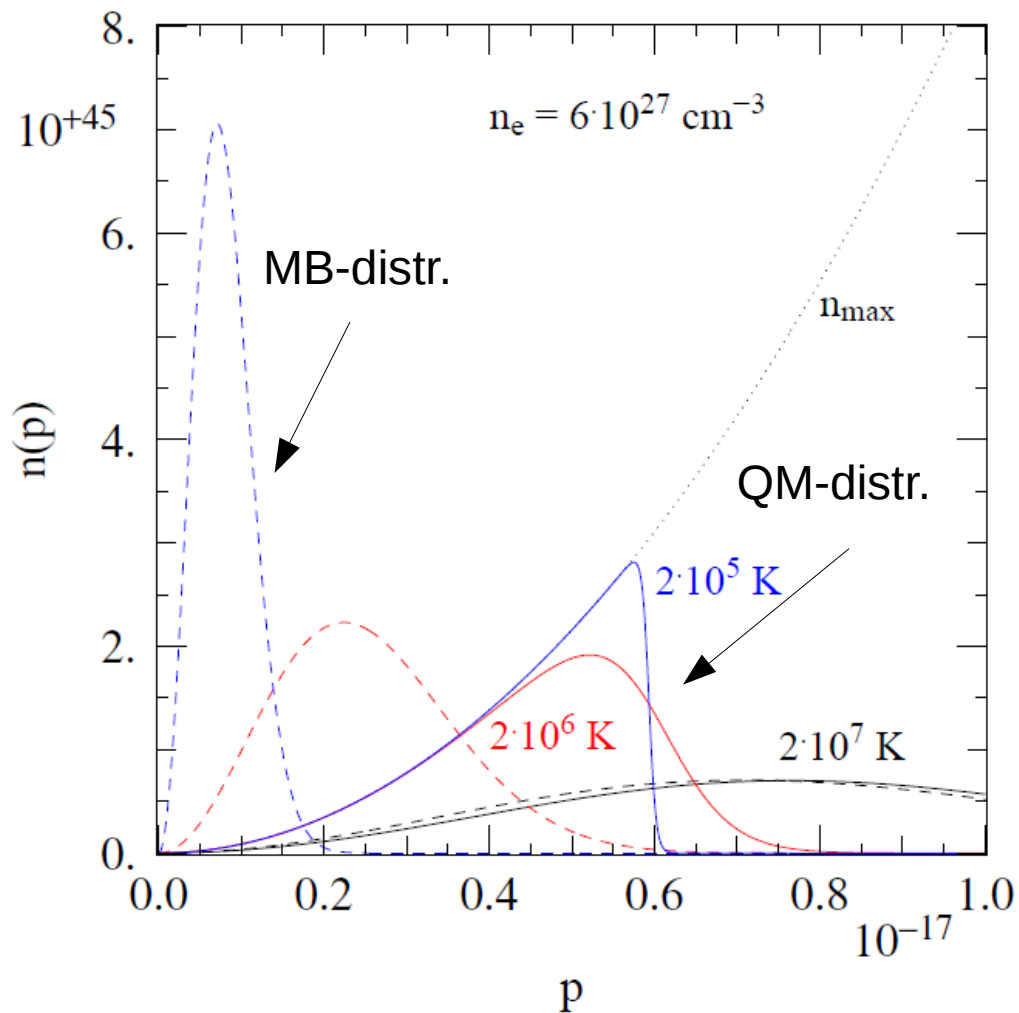
&

L4: Energy Conservation &  
Transport

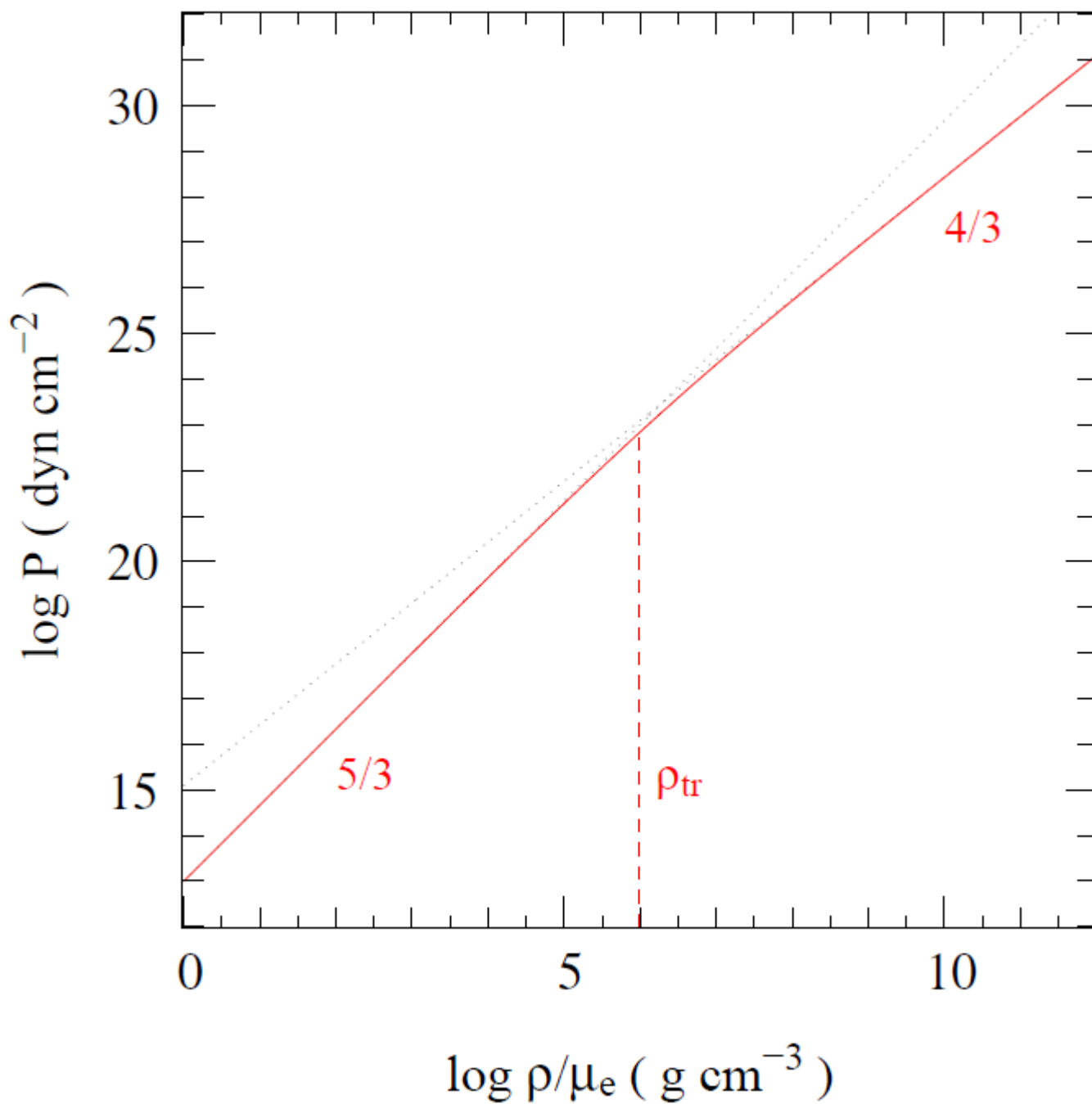
# Classical (MB) vs QM Momentum Distributions



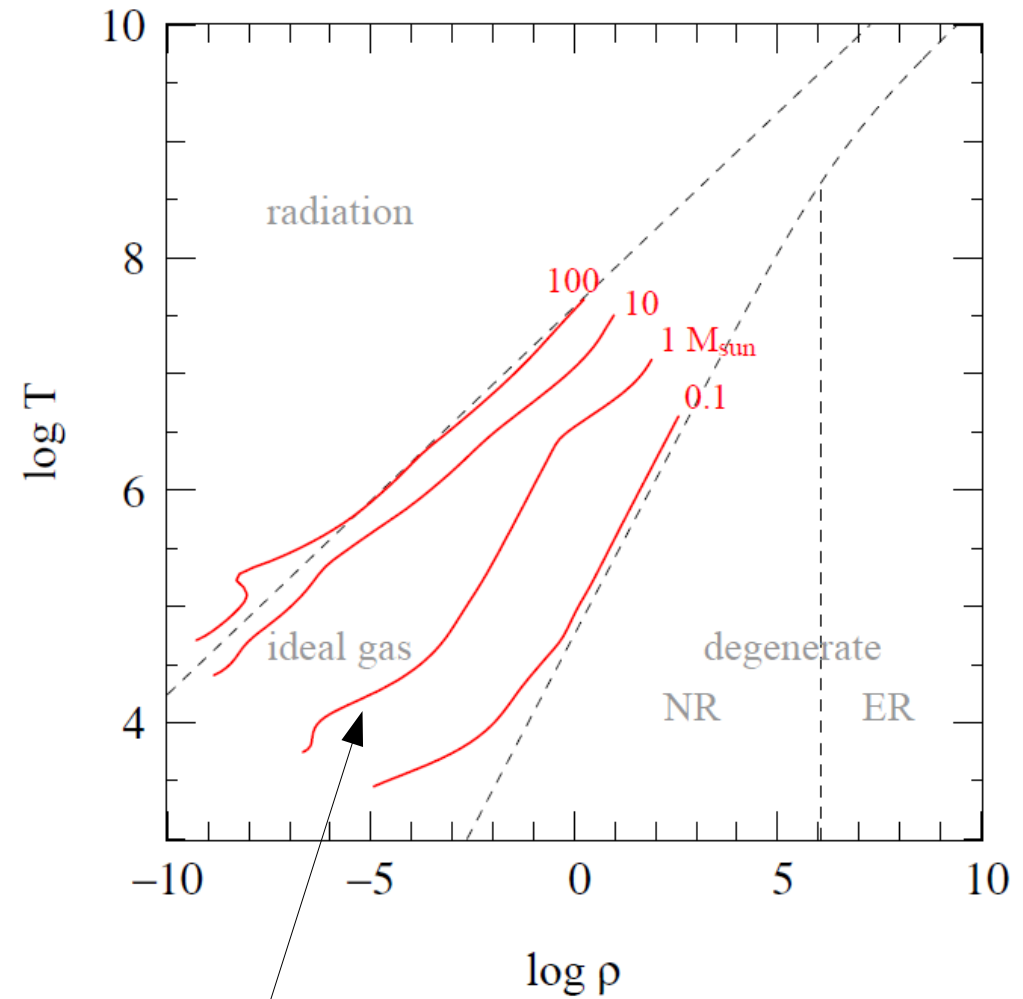
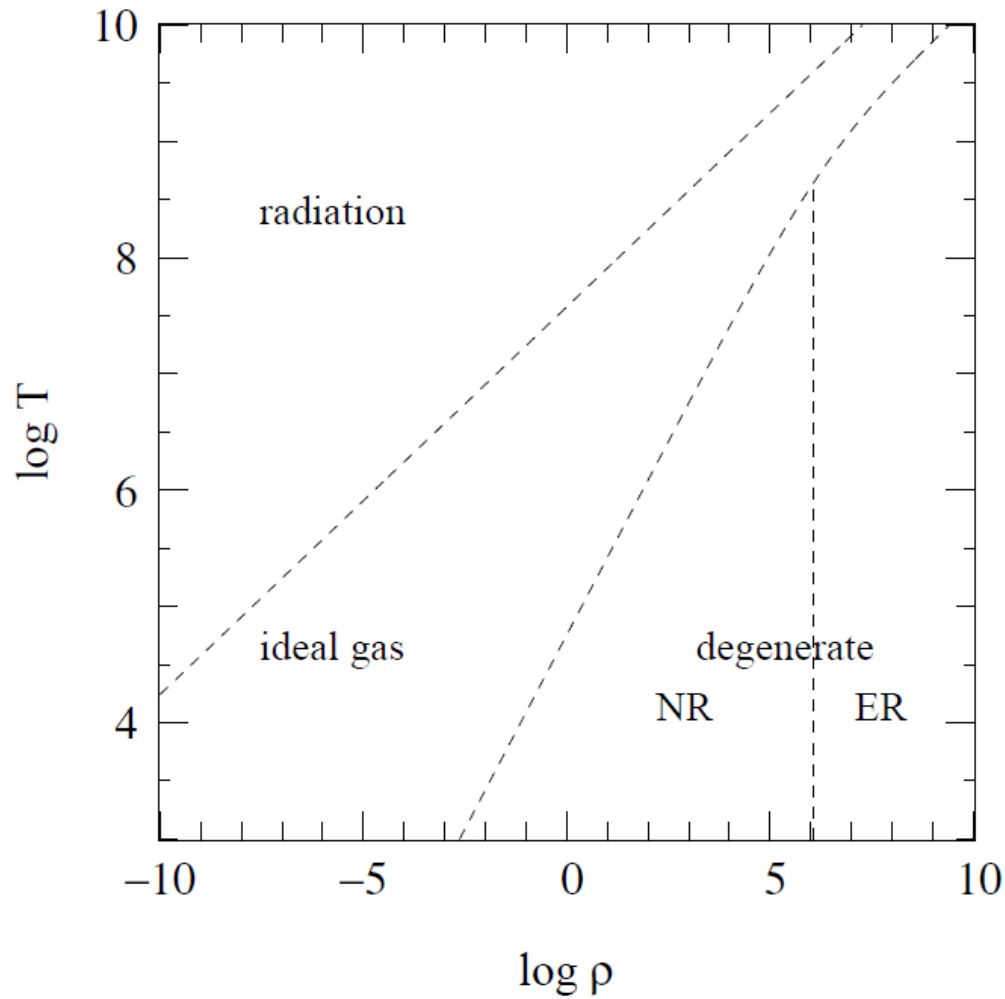
# Classical (MB) vs QM Momentum Distributions



# *EOS for Completely Degenerate Electrons*



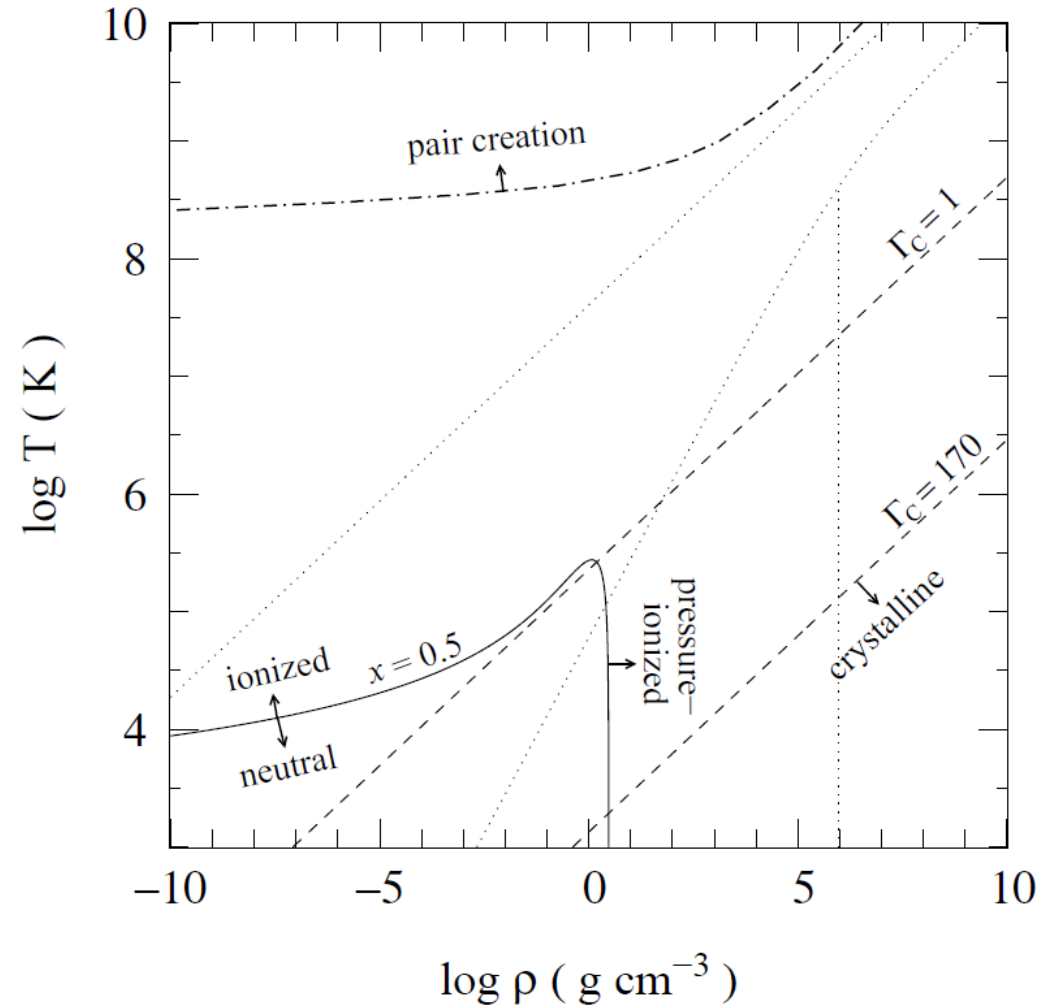
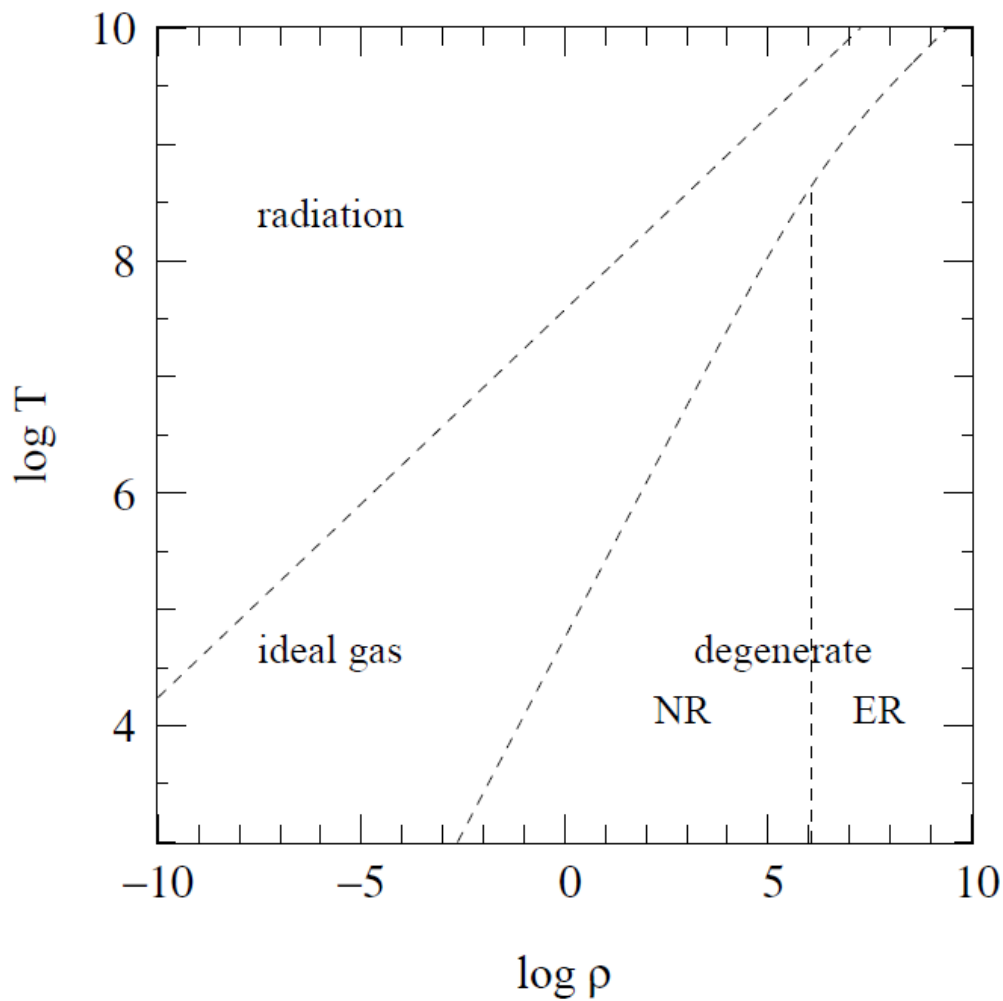
# EOS Regimes



Structure profiles (during MS)

# EOS Regimes: Additional Effects

e-e+ pair-creation at high T / partial ionisation at low T / Crystallisation at low T+high rho



# Opacities: Tables & Contours

THE ASTROPHYSICAL JOURNAL SUPPLEMENT SERIES, 192:3 (35pp), 2011 January

PAXTON ET AL.

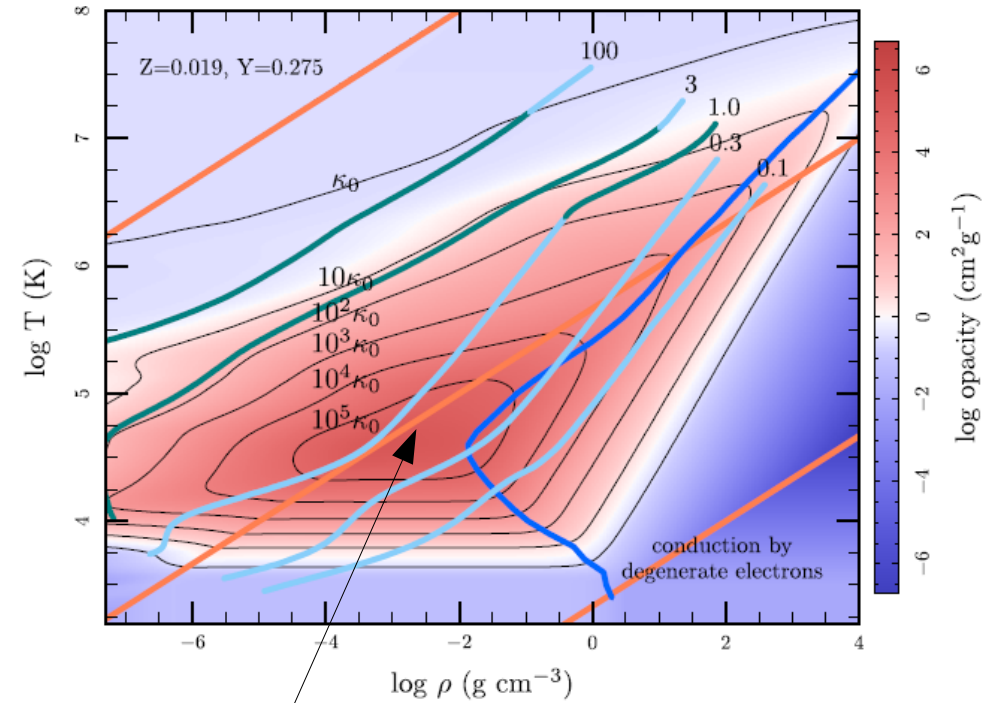
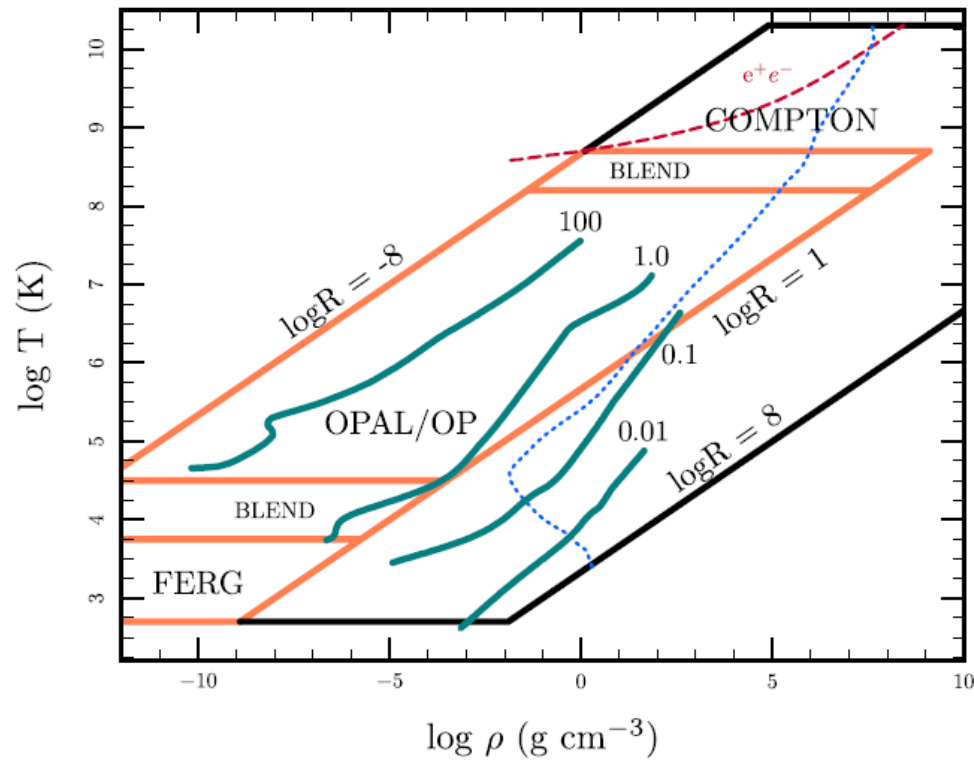


Figure 3. Resulting MESA opacities for  $Z = 0.019$ ,  $Y = 0.275$ . The underlying plot shows the contours of  $\kappa$  and the contours are in units of  $\kappa_0$ .

Opacity peak leads to convective envelopes for low mass stars and super/giant stars