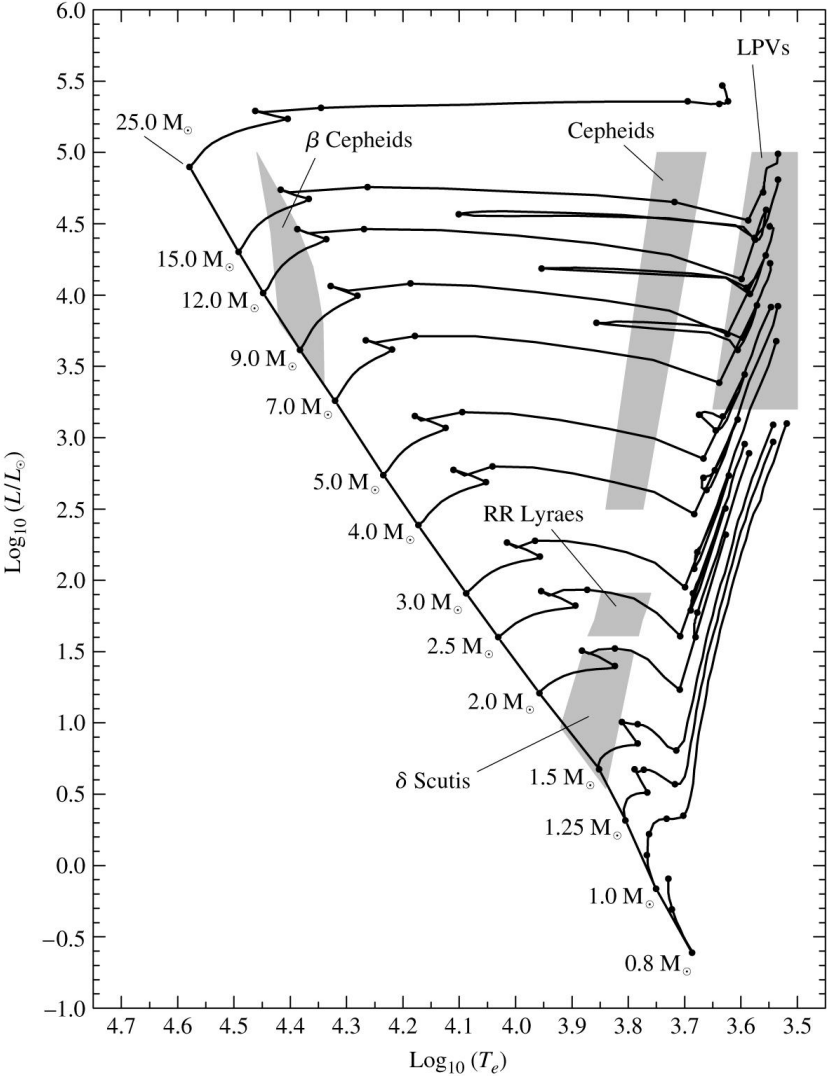
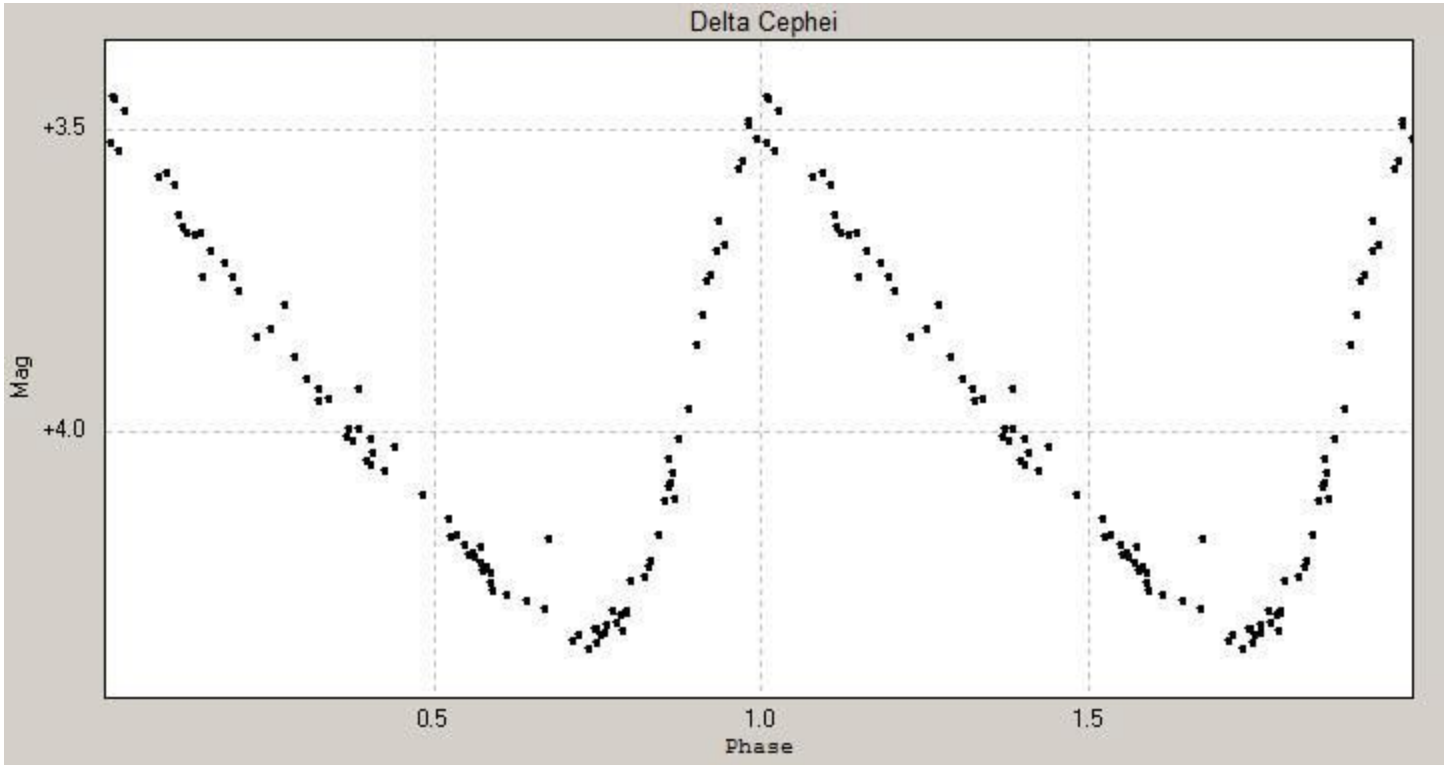
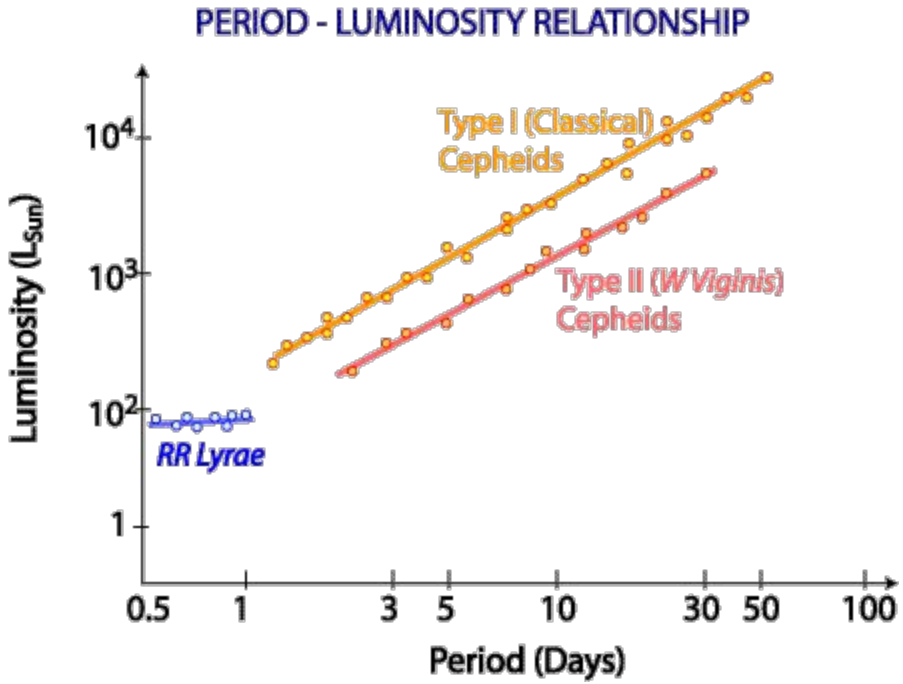
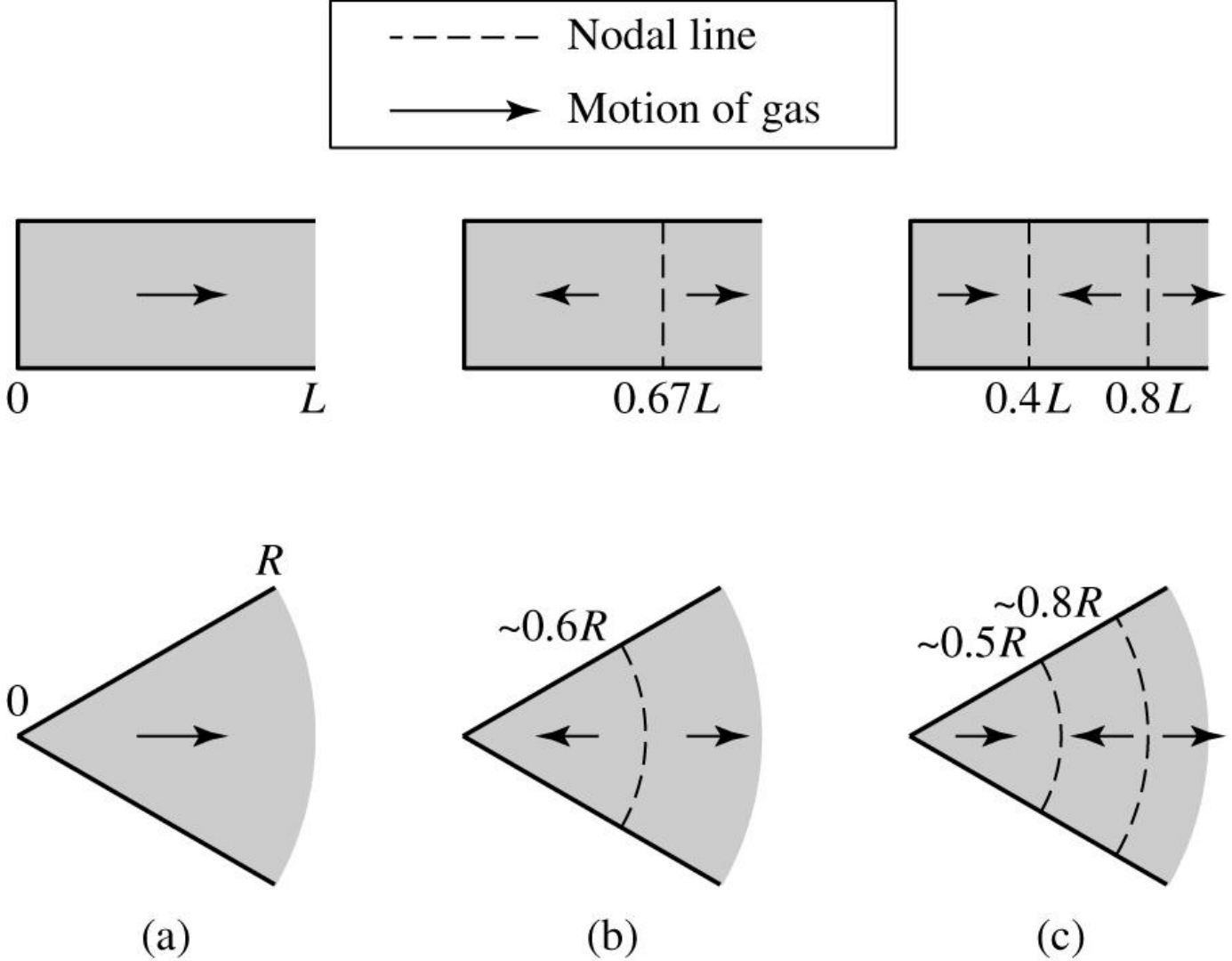
ASTR367

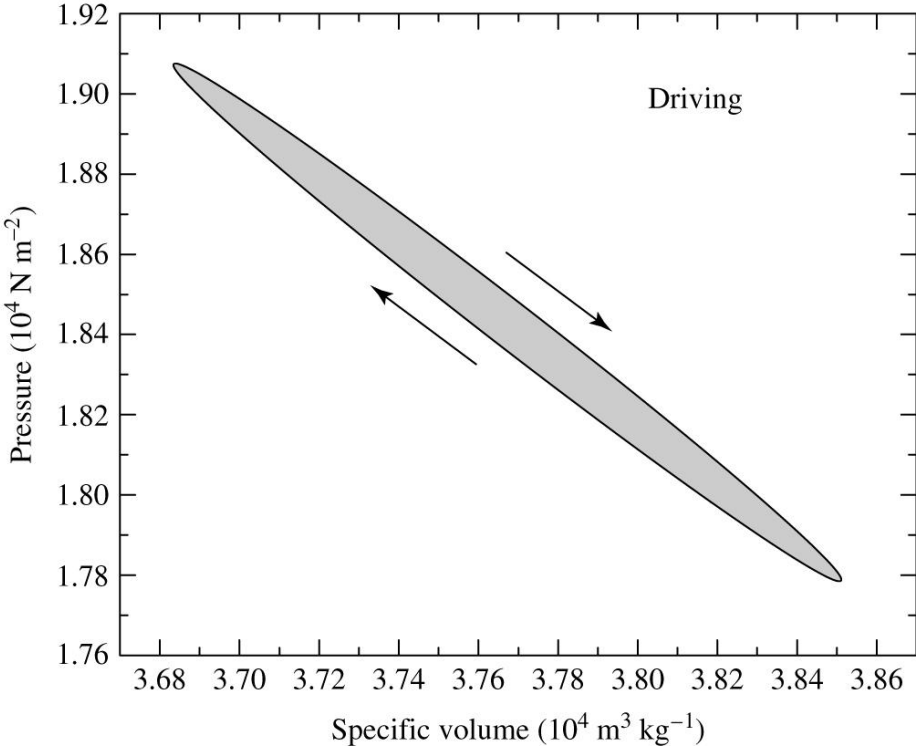
Line Emission

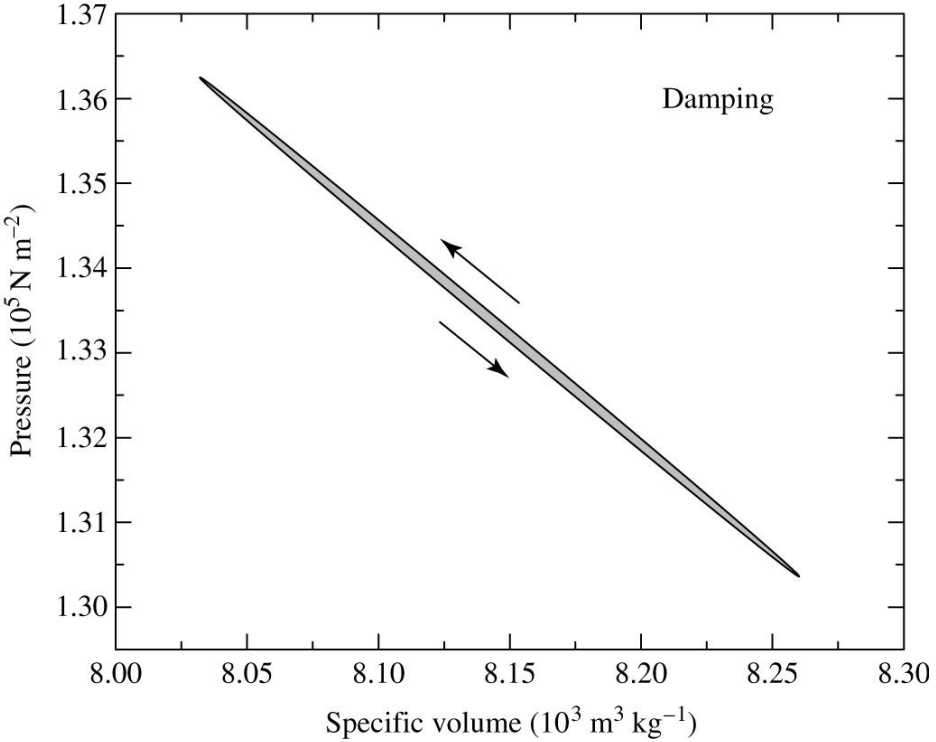

LPVs
25.0 M⊙
β Cepheids
Cepheids
15.0 M⊙
12.0 M⊙
9.0 M⊙
7.0 M⊙
5.0 M⊙
4.0 M⊙
RR Lyraes
3.0 M⊙
2.5 M⊙
2.0 M⊙
δ Scutis
1.5 M⊙
1.25 M⊙
1.0 M⊙
0.8 M⊙
Log10 (L/L⊙)
Log10 (Te)
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
−1.0
4.7
4.6
4.5
4.4
4.3
4.2
4.1
4.0
3.9
3.8
3.7
3.6
3.5


Delta Cephei
+3.5
+4.0
Mag
0.5
1.0
1.5
Phase


PERIOD - LUMINOSITY RELATIONSHIP
Luminosity (L_{Sun})
10^4
10^3
10^2
1
Type I (Classical) Cepheids
Type II (*W Viginis*) Cepheids
RR Lyrae
0.5
1
3
5
10
30
50
100
Period (Days)


Nodal line
Motion of gas
0
L
0.67L
0.4L
0.8L
R
0
~0.6R
~0.8R
~0.5R
(a)
(b)
(c)


Driving
Pressure (10^4 N m^{-2})
1.92
1.90
1.88
1.86
1.84
1.82
1.80
1.78
1.76
3.68 3.70 3.72 3.74 3.76 3.78 3.80 3.82 3.84 3.86
Specific volume (10^4 m^3 kg^{-1})


Damping
Pressure (10^5 N m^{-2})
1.37
1.36
1.35
1.34
1.33
1.32
1.31
1.30
8.00 8.05 8.10 8.15 8.20 8.25 8.30
Specific volume (10^3 m^3 kg^{-1})