

Graduate course on Stellar Atmospheres - AGA 5724

prof. Marcos Diaz

1. Basic concepts and definitions
2. Radiative Transfer Equation.
3. LTE vs. NLTE
4. Simple solutions. Grey atmosphere
5. Continuum opacity
6. Bound-bound transitions
7. Model atmospheres
8. Probabilistic radiative transfer
9. Line formation - microscopic broadening
10. Stellar rotation and Turbulence. Doppler Imaging

TEST I.

11. Line broadening in the HR diagram
12. Line radiative transfer. Line transfer in accelerated medium
13. Growth curves
14. Diagnostic of Temperature and $\log(g)$.
15. Spectral synthesis
16. Hot and cool atmosphere models
17. Fourier methods in observational spectroscopy

TEST II.

Hands-on activities:

1. Calculus and comparative study of hot atmosphere structures
2. Spectral synthesis of hot stellar atmospheres and growth curves

Bibliography

Hubeny, I, & Mihalas, D., 2015, "Theory of Stellar Atmospheres"

Mihalas, D. 1970, 1978, "Stellar Atmospheres"

Rutten, R. 1995, "Radiative Transfer in Stellar Atmospheres"

Gray, D. 1992, "The Observation and Analysis of Stellar Atmospheres"

Swihart, T. 1981, "Radiation Transfer and Stellar Atmospheres"

Böhm-Vitense, E. 1989, "Introduction to Stellar Astrophysics v.2 - Stellar Atmospheres"

Rose, W. K. 1998, "Advanced Stellar Astrophysics"