1) Introduction:
Stellar Evolution -HR diagram (Boyajian 2013 (Bee's Knees! See print out pile 3))
Stellar structure – Internal & Atmospheric
- here give a table of scale height, pressure/density scale height for the Sun, Arctutus, Aldaberan, Betelgeuse
Betelgeuse – very large scale height => resulting in the presence of no more than a few giant and stable convection cells at photospheric level (Schwarzschild 1975, Chiavassa et al. 2010)
Stellar Chromospheres
Stellar Winds
Radio emission from these (flux excess above RJ e.g. Lamers and Cassinelli)
Circumstellar environments (Lamers and Cassinelli CO)
Stellar Radio Interferometry and Radio Emission Mechanisms
(single vs inter e.g. Perley and Butler 2013)
single dish vs interferometry (Perley & butler 2013)
Measurement Equation
Radio emission mechanisms with emphasis on molecular and free-free
Derivation for radio power law for stellar wind with constant and non-constant temperature (Appendix)

2) Instrumentation & Observations
a) Radio Antenna Basics
b) CARMA
c) JVLA
d) GMRT?
a) Observational Preparation
mainly vla stuff
b) Observations
weather, Tables from papers

3) Data Processing
Flagging, Calibration & Imaging
a) CARMA
CLEAN vs MEM vs Multi-scale Clean (for Peter!)
Final Image Cube (High and Low res)
b) JVLA
Dirty Image, PSF
Show images of calibrators
Final Radio Maps (aboo and atau)
c) GMRT?

4) The Circumstellar Environment of Betelgeuse
a) spectra
c) images
b) 2nd source
c) e-Merlin:
position
GMH model vs emerlin
CASA simulation with VLA (why we dont see it with pi-town of A-config)

5) Multi-w/l radio emission studies of Red Giants
a) Comparison to Previous Models/Data
b) Spectral Indices
c) Analytical Advection Model

6) Thermal Energy Balance of Arcturus' Outflow
Cool stars (needs some additional work)
Possible use new analytical model from VLA paper

7) Extrasolar Planetary Radio Emission Search ?

8) Conclusions and Future Work
a) Betelgeuse with ALMA (CO and continuum)
b) Sample Study of radio emission from red giants
c) Advection code