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Astereoseismology of Beta Cepheid Stars using multicolor photometry: Mode Identication.

Wednesday, 10 July 2013 17:40 (1 hour)

Abstract content
 (Max 300 words)

The thesis involves the study of young population B type Cepheid variable stars using seismic waves to study their oscillation modes. The goal is to identify the modes associated with the frequencies over the ranges of the quantum numbers n and l so that deductions can be made about the internal structure and composition of the star. For the Cepheids there are two types of pulsation modes p, or pressure modes, and g, or gravity modes, each of which penetrate to dierent depths in the star thus probe conditions in the outer and inner parts of the star. Time series data collected from observations at Sutherland will be Fourier analyzed and modes identied from the frequency peaks in the spectrum. In the theoretical model, the amplitude ratios are calculated for dierent values of the degree l of the spherical harmonic and wavelength and the computed values then compared with amplitude ratios obtained from observational measurements at the same wavelengths. The theoretical model includes information about metallicity, temperature, density, pressure and the known atmospheric parameters with regards to the hypothetical Cepheid star. Once the theoretical amplitudes are matched with the observational amplitudes, within a certain error bar, then the mode l can be identied. My goals will be to analyze the observed pulsations in certain Cepheid stars to obtain information about their physical parameters such as size and evolutionary state.

Apply to be
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Level for award
 (Hons, MSc,
 PhD)?

MSc

Main supervisor (name and email)
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Professor Medupe

Would you like to
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Yes

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