



Non-radial modes in cool stars

D. Stello

(Submitted on 7 Jul 2011 (v1), last revised 18 Jul 2011 (this version, v2))

In cool stars that oscillate like the Sun, non-radial modes become mixed as the stars evolve. The mixing is caused by the coupling between g-modes in the stellar core and p-modes in the envelope, which results in distinctly different and more complex frequency spectra for subgiants and red giants than seen in main sequence stars. Using a new version of the 'scaled' \echelle diagram, I illustrate how the frequencies of non-radial modes evolve during the evolution from the main sequence to the red giant branch, and I show how they depend on stellar mass and metallicity. Then, with focus on the dipole ($l = 1$) modes, which show the strongest effects from mixing, I present a toy model to fit, and hence identify, those modes in a large series red giant models.

Comments: 11 pages, 7 figures, To appear in the ASP proceedings of "The 61st Fujihara seminar: Progress in solar/stellar physics with helio- and asteroseismology", 13th-17th March 2011, Hakone, Japan. Ed: Hiromoto Shibahashi

Subjects: **Solar and Stellar Astrophysics (astro-ph.SR)**

Cite as: [arXiv:1107.1311](#) [astro-ph.SR]

(or [arXiv:1107.1311v2](#) [astro-ph.SR] for this version)

Submission history

From: Dennis Stello [[view email](#)]

[v1] Thu, 7 Jul 2011 07:50:20 GMT (389kb)

[v2] Mon, 18 Jul 2011 20:53:59 GMT (390kb)

[Which authors of this paper are endorsers?](#)

Link back to: [arXiv](#), [form interface](#), [contact](#).

Download:

- [PDF](#)
- [PostScript](#)
- [Other formats](#)

Current browse context:

astro-ph.SR

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1107](#)

Change to browse by:

[astro-ph](#)

References & Citations

- [INSPIRE HEP](#)
([refers to](#) | [cited by](#))
- [NASA ADS](#)

Bookmark([what is this?](#))

