

**Título/Title:**

Good Vibrations: Star Quakes and What They can Reveal about Magnetic Activity Levels

**Orientador/Supervisor:**

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**Descrição/Description:**

In the Sun, the frequencies of the acoustic modes trapped in its interior are observed to vary in phase with the magnetic activity level over the 11-year solar cycle. These frequency variations are expected to be common in solar-type stars and contain information about the activity-related changes that take place in their interiors.

The unprecedented high-quality, long-term photometric time series obtained by NASA's Kepler satellite provide a unique opportunity to detect and characterize stellar magnetic cycles through asteroseismology. Based on the temporal frequency variations that have been measured for a sample of 87 benchmark, solar-type stars, the goal of this project is to perform an ensemble analysis to assess the dependence of the observed frequency shifts on the stellar fundamental properties (e.g., age, effective temperature, and surface rotation).

The outcome of this project will be extremely valuable in that it will inform our current understanding of magnetic activity in stars other than the Sun as well as of the different dynamo mechanisms that might be at work. Furthermore, the research output will be incorporated in an article to be submitted to a peer reviewed, high-impact journal.

**Requisitos/Requirements:**

Some previous knowledge of computer programming is required, preferably in Python.