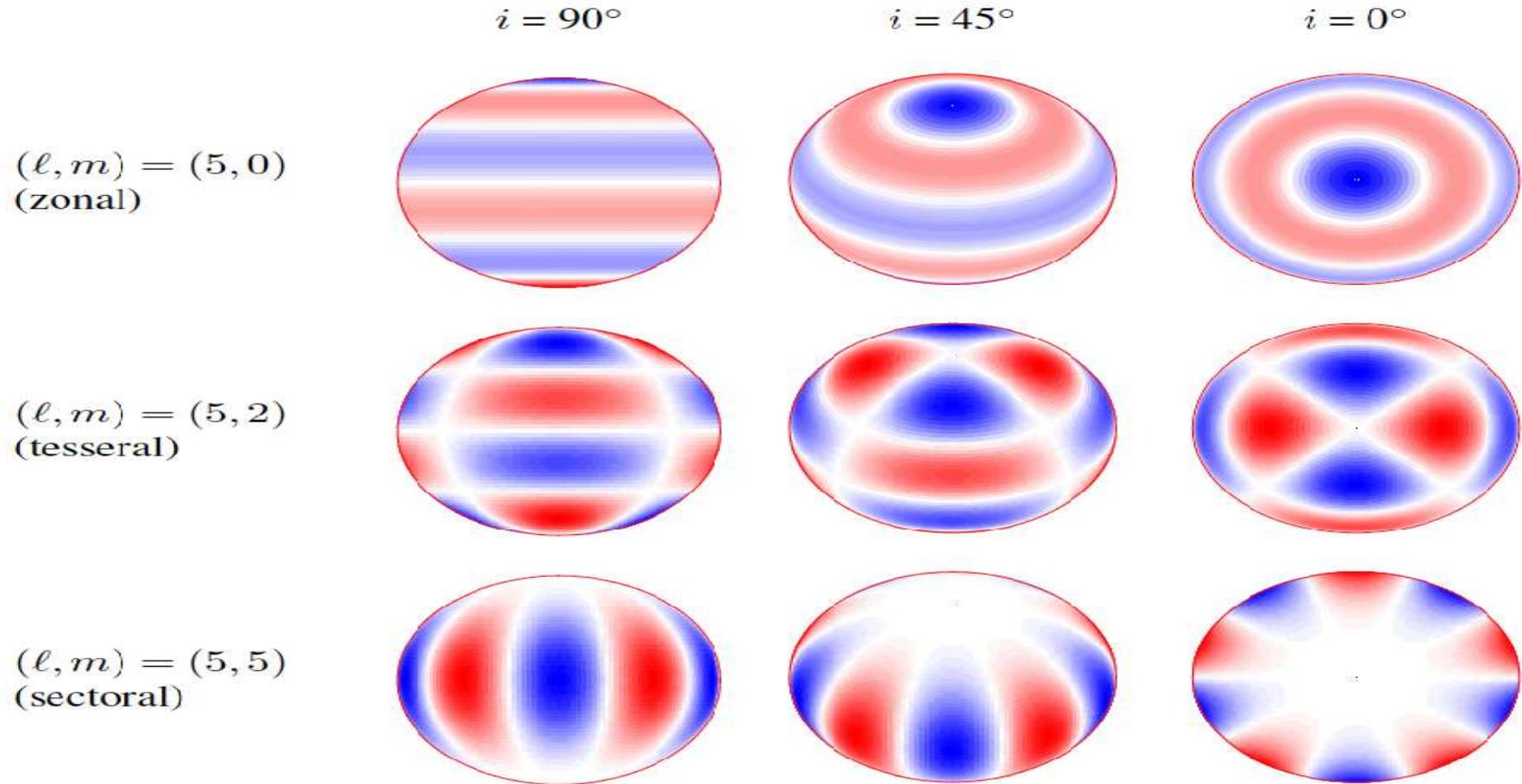


# Asteroseismology of eclipsing $\beta$ Cep stars



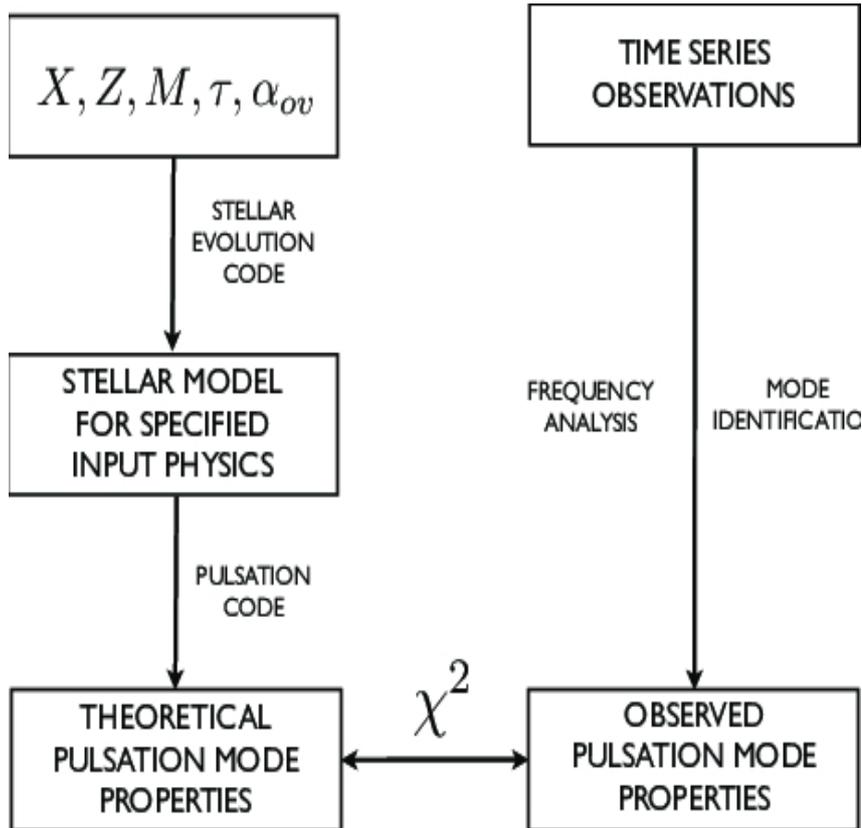
- Christian Ikechukwu Eze
- PhD student, CAMK PAN
- Annual meeting, Feb. 05, 2026
- Supervisor: Prof Gerald Handler

# Introduction



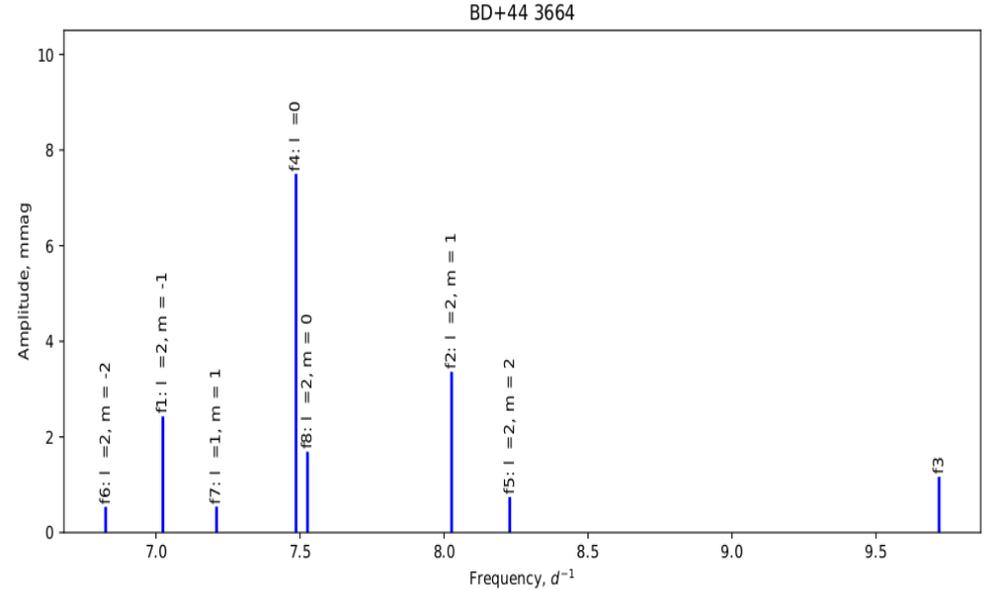
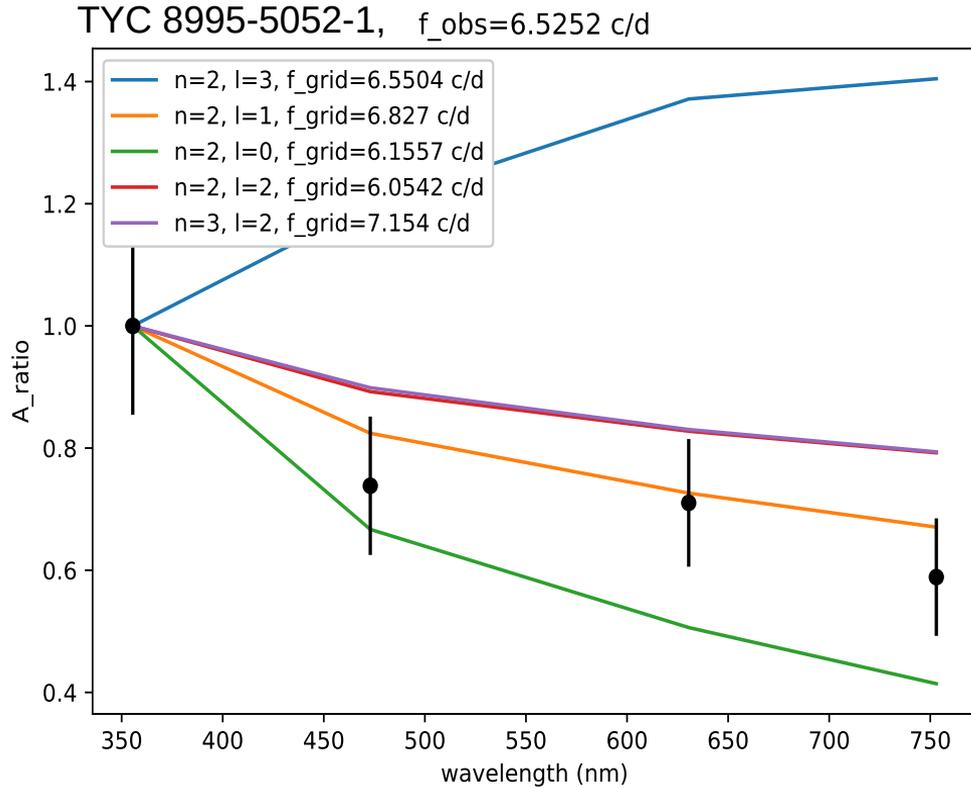
Doppler map of a nonradial pulsating star. Image Credit (Conny Aerts)

# Introduction cont.



- A snapshot of the principle of asteroseismic modelling, where the dependency on the chosen input physics of the equilibrium models is shown by the stellar model for specified input physics. Image credit: Katrijn Clémer.

# Mode identification

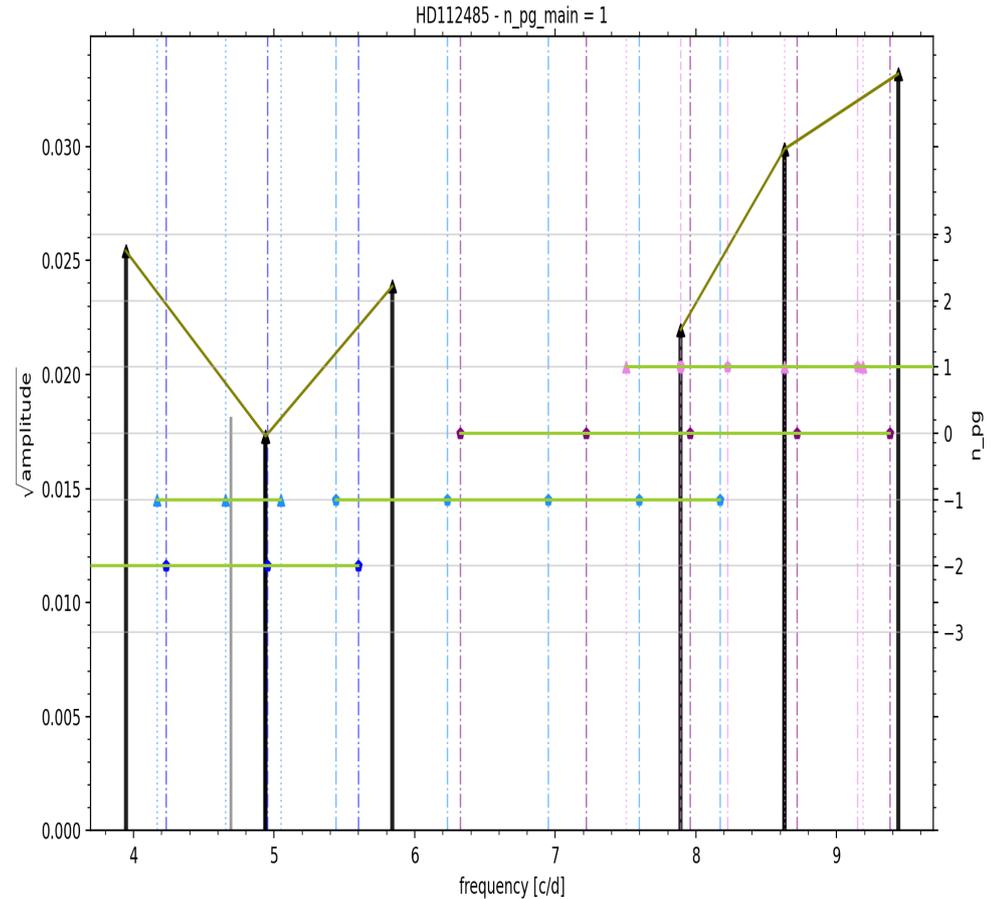
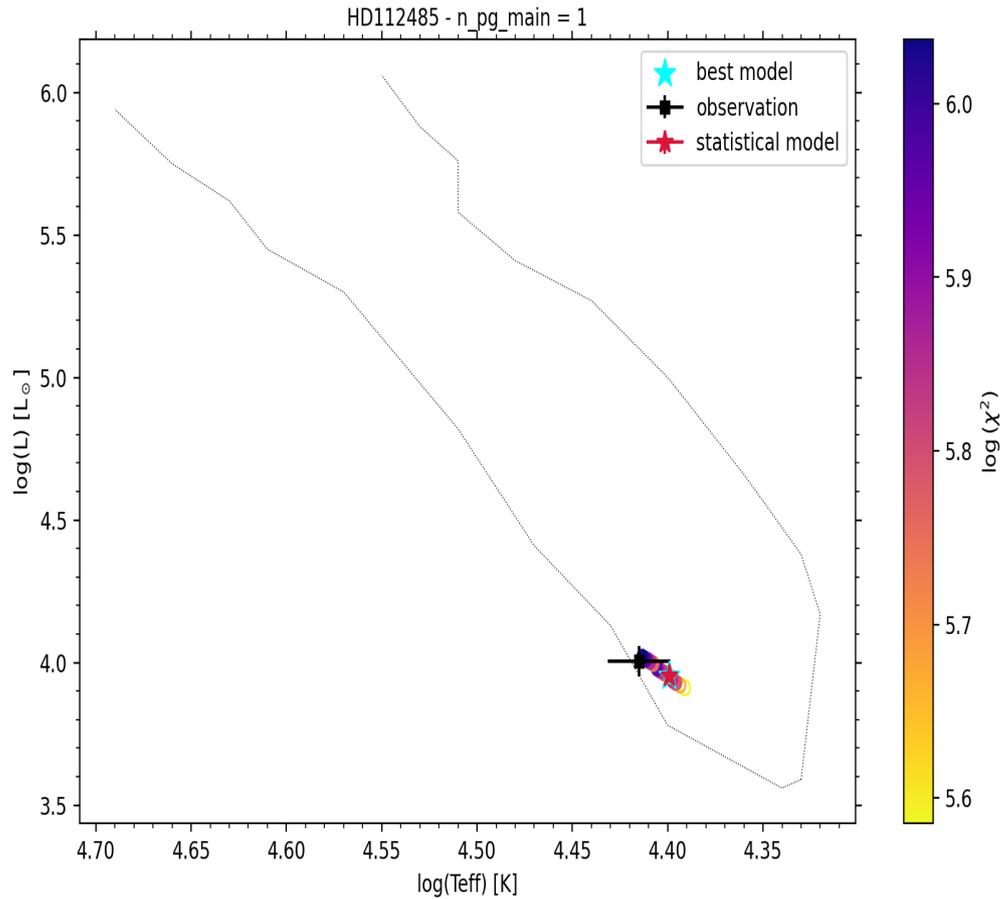


$$f_{n,l,m} = f_{n,l,0} + m \cdot \Omega \cdot (1 - C_{n,l})$$

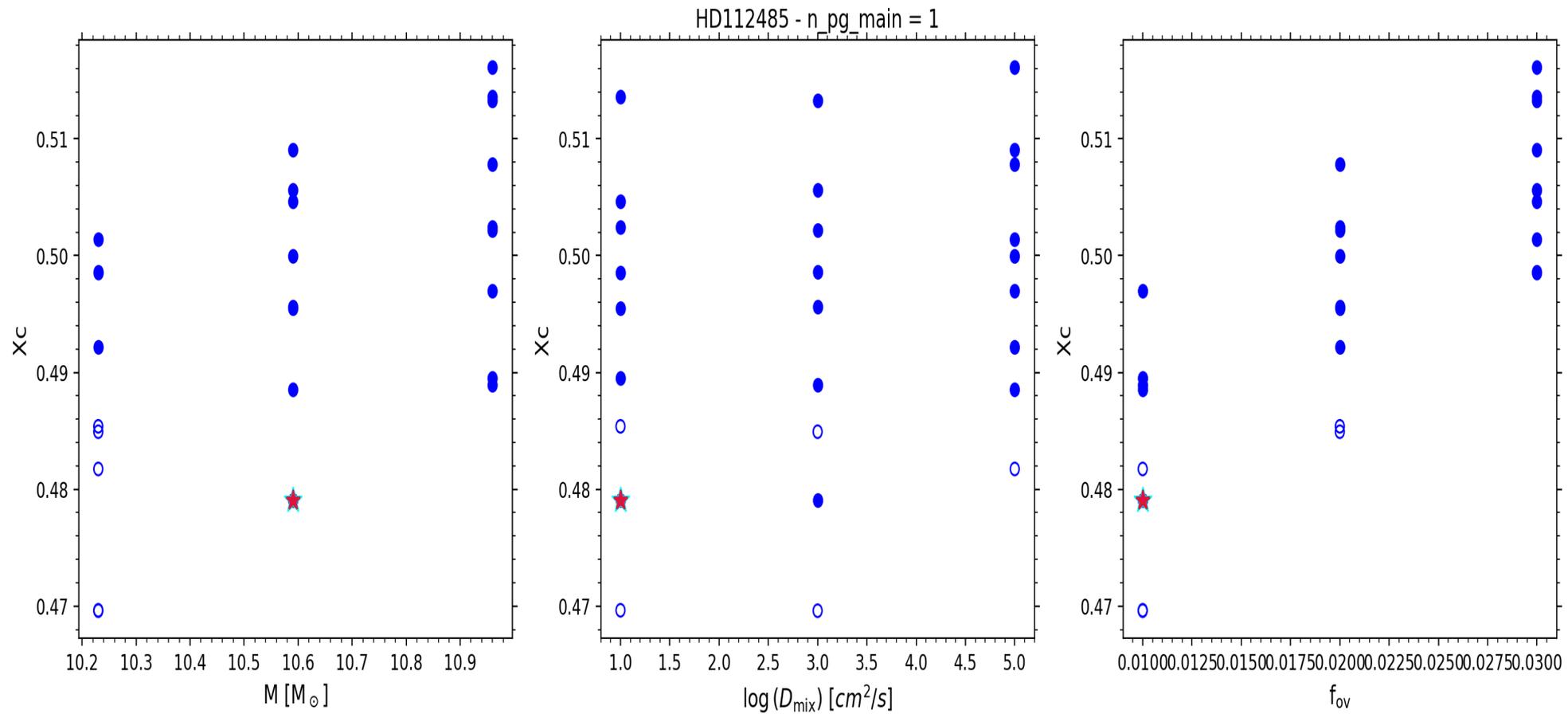
Rotational Frequency,  $\Omega = (0.700921 + 0.702223) / 4 = 0.35$  c/d

# Asteroseismic modelling

(preliminary results)



*Preliminary results*



## Activities in 2025

- International conferences: 1 talk and 1 poster (Binary star conference, UK and TASC/KASC, Austria)
- national Conference: 1 poster (PTA, Warsaw)
- Invited seminar talks: 1 (FAST4Future online monthly seminar series)
- Internship: 3 months (KU Leuven, Belgium)
- NAWA Bekker grant (BPN/BEK/2024/1/00049)
- Observation runs: 3 weeks (OCM, Chile)
- Assistant reviewer for MNRAS

# Publications

- C. I. Eze, G. Handler, F. K. Alicavus, T. Pawar, and A. Miszuda (2025). Characterizing the variability of a sample of massive stars in eclipsing binaries. **Contributions of the Astronomical Observatory Skalnaté Pleso, 55(3): 452-461**
- A. Miszuda, C. I. Eze, F. K. Alicavus, C. Johnston, and G. Handler. Eclipsing binary systems with  $\beta$  Cephei components: V1216 Sco. **Submitted to Astronomy & Astrophysics.**
- C. I. Eze, G. Handler, F. Kahraman Aliçavus, T. Pawar, and P. De Cat. Orbital and stellar parameter determination of eclipsing  $\beta$  Cep pulsators. **Submitted to Astronomy & Astrophysics.**

Thank you