

# Hot stars in the whole CoRoT mission

**Maryline Briquet**

# OB and Be stars in the CoRoT SISMO fields

40 hot stars observed including

- 12 Be stars (talk Eduardo Janot-Pacheco)
- 6 O stars
- 1 HgMn star (poster Thierry Morel, talk Georges Alecian)

Analysis of light curves

- + ground-based spectroscopy (ESO LPs, talk of PI Ennio Poretti)
- + ground-based spectropolarimetry

# OB and Be stars in the CoRoT SISMO fields

| <u>Star</u> | <u>Run</u> | <u>Sp Type</u> | <u>Star</u> | <u>Run</u> | <u>Sp Type</u> |
|-------------|------------|----------------|-------------|------------|----------------|
| HD 50846    | IRa01      | B5e+G          | HD 46149    | SRa02      | O8.5V          |
| HD 174884   | SRc01      | B6+B7          | HD 46223    | SRa02      | O5             |
| HD 175869   | SCc01      | B9IIIe         | HD 51756    | LRa02      | B0.5V          |
| HD 182198   | LRc01      | B9V            | HD 51452    | LRa02      | B0IVe          |
| HD 181440   | LRc01      | B9III          | HD 43317    | LRa03      | B3IV           |
| HD 180642   | LRc01      | B1.5II         | HD 48752    | SRa01/05   | B9V            |
| HD 181231   | LRc01      | B5Ve           | HD 172046   | LRc02      | B8 SB2         |
| HD 50064    | LRa01      | B6I            | HD 51193    | LRa02      | B1Vnne         |
| HD 50230    | LRa01      | B3V            | HD 46769    | SRa03      | B8lab          |
| HD 49330    | LRa01      | B0e            | HD 43913    | LRa03      | A0e            |
| HD 50209    | LRa01      | B9e            | HD 43285    | LRa04      | B6Ve           |
| HD 48977    | SRa01      | B2.5V          | HD 45975    | SRa04      | B9V            |
| HD 49677    | SRa01      | B9             | HD 45418    | SRa04      | B4             |
| HD 170935   | LRc02      | B8             | HD 45546    | SRa04      | B2V            |
| HD 174648   | SRc02      | B9             | HD 171219   | LRc05/6    | B8e            |
| HD 47129    | SRa02      | O8V            | HD 170580   | LRc05/6    | B3V            |
| HD 46966    | SRa02      | O8V            | HD 170783   | LRc05/6    | B5e            |
| HD 46179    | SRa02      | B9V            | HD 49585    | SRa06      | B0e            |
| HD 46202    | SRa02      | O9V            | HD 42597    | LRa05      | B1V            |
| HD 46150    | SRa02      | O6             | HD 170200   | LRc07      | B8III          |

# B stars

HD 180642 B1.5II

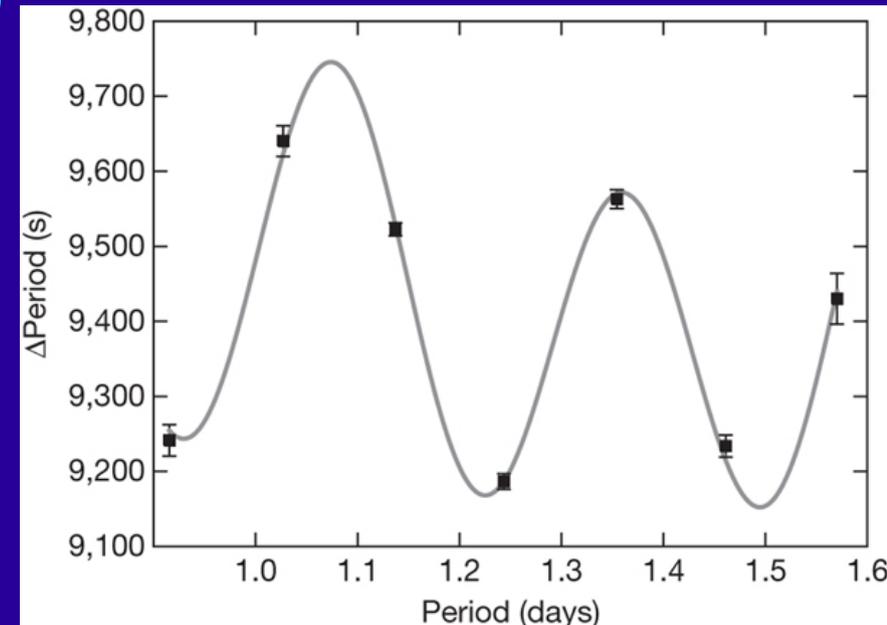
First discovery of solar-like oscillations  
in a massive star

Belkacem et al. 2009, Science 324; Degroote et al. 2009, A&A 506, 111;  
Briquet et al. 2009, A&A 506, 269; Aerts et al. 2011, A&A 534, 98

HD 50230 B3V

First observation of deviations from  
a uniform period spacing  
of gravity modes  
in a hybrid B star

Degroote et al. 2010, Nature 464, 259;  
Degroote et al. 2012, A&A, 542, 88;  
Miglio et al. 2008, MNRAS 386, 1487

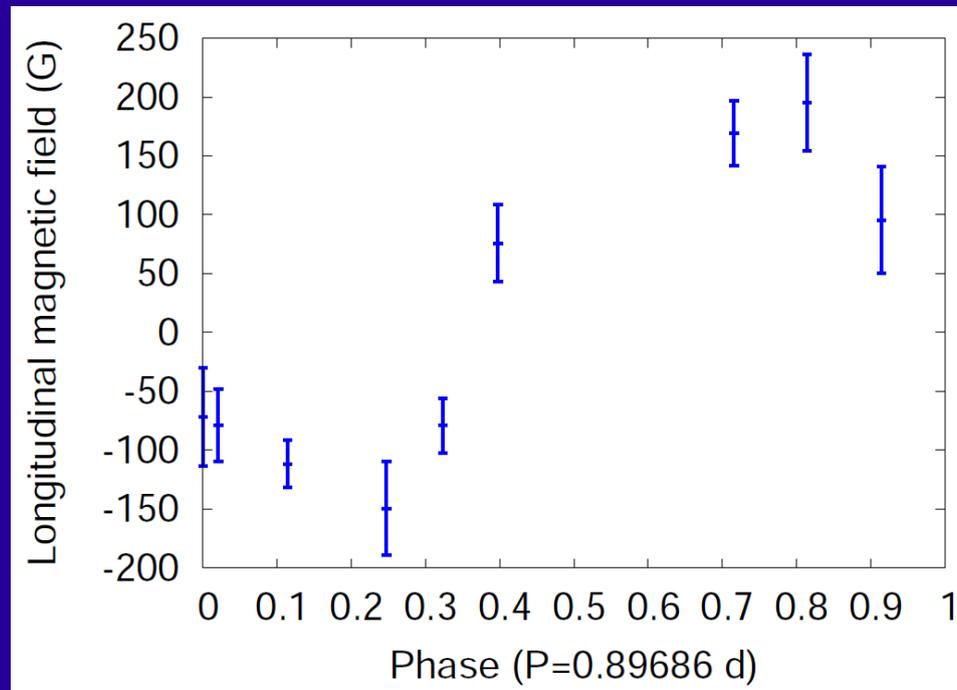


# B stars

HD 43317 B3IV

Hybrid B pulsator with rotational modulation  
and a magnetic field

Papics et al. 2012, A&A 542, 55



HD 48977 B2.5V

Hottest hybrid B star

Thoul et al. 2013, A&A 551

# B stars

HD 174884 B6+B7

Tidally induced pulsations

Maceroni et al. 2009, A&A 508, 1375

HD 51756 B0.5V

No pulsation signal – rotational modulation only

Papics et al. 2011, A&A 528, 123

HD 182198 B9V – HD 181440 B9III – HD 49677 B9 –

HD 170935 B8 – HD 174648 B9 – HD 46179 B9V

Evidence for spots and  
latitudinal differential rotation

Degroote et al. 2011, A&A 536, 82

# Be stars

HD 50209 B9e

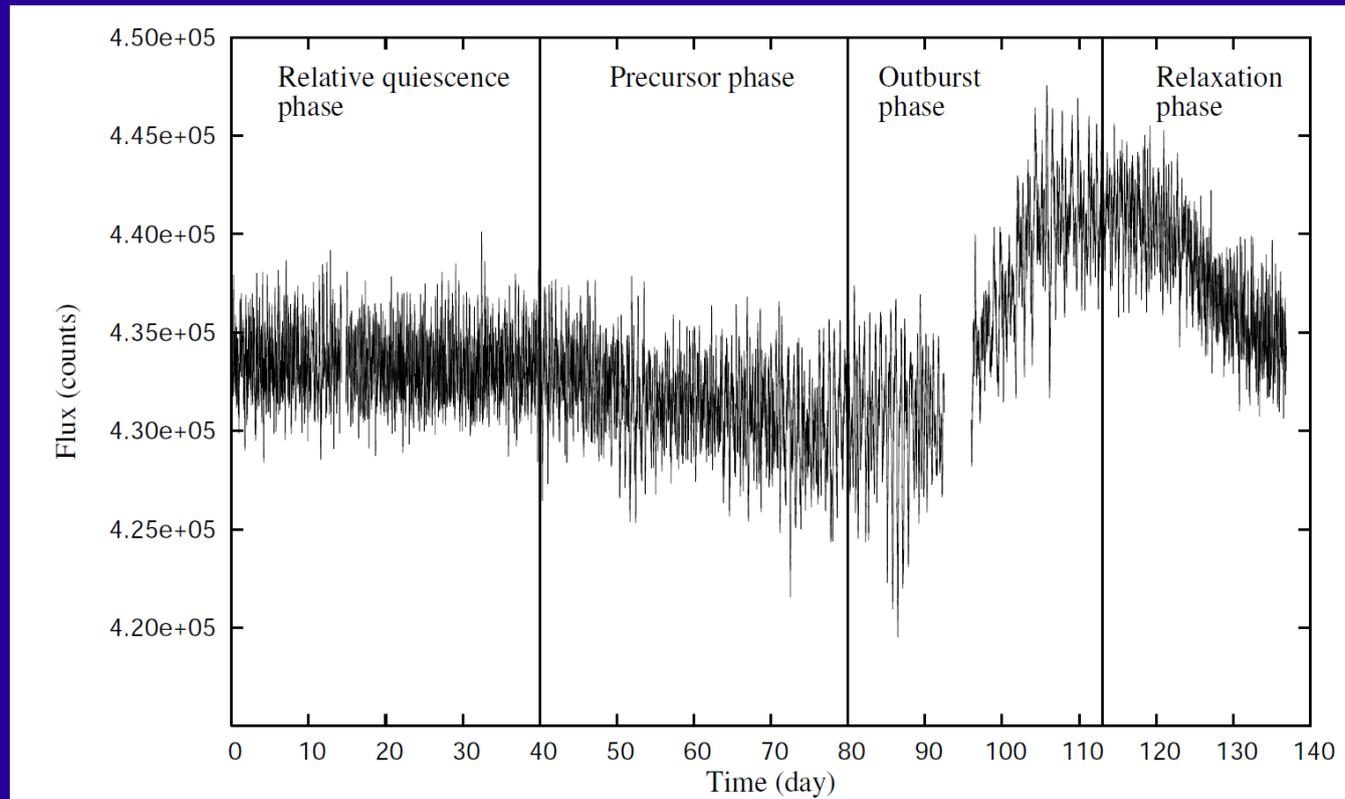
Stellar pulsations also in mid and late Be stars

Diago et al. 2009, A&A 506, 125

HD 49330 B0e

Correlation between pulsations and outbursts

Huat et al. 2009, A&A 506, 95; Floquet et al. 2009, A&A 506, 103



# Be stars

HD 175869 B9IIIe – HD 181231 B5Ve

Determination of the size and mass of the core  
of a Be star - extra mixing of  $\alpha_{ov} = 0.3-0.35 H_p$

Gutierrez-Soto et al. 2009, A&A 506, 133; Neiner et al. 2009, A&A 506, 143;  
Lovekin et al. 2010, AN 331, 1061; Neiner et al. 2012, A&A 539, 90

HD 51452 B0IVe

First discovery of stochastically excited  
gravito-inertial modes

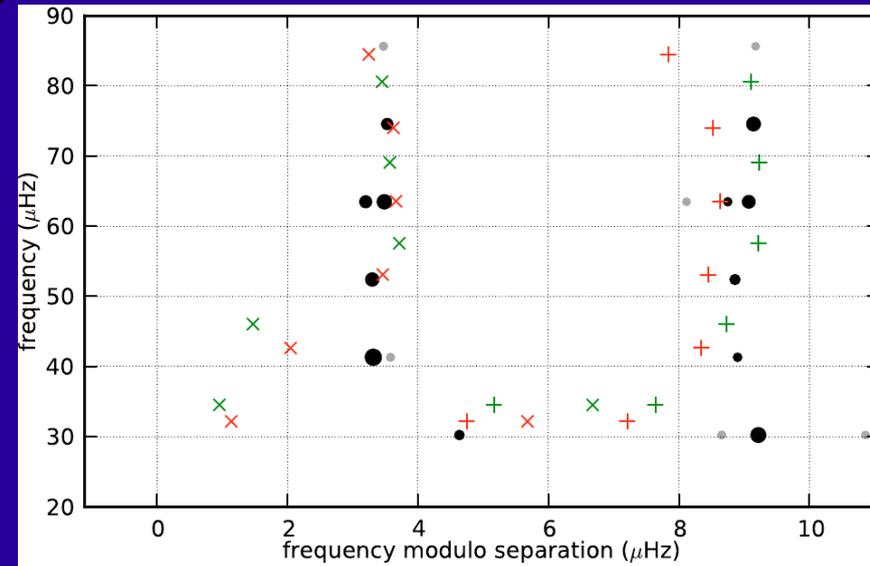
Neiner et al. 2012, A&A 546, 47

# O stars

HD 46149 O8.5V

Solar-like modes that  
fulfill an échelle diagram

Degroote et al. 2010, A&A 519, 38



HD 46202 O9V

$\beta$  Cep-like modes not predicted to be excited

Briquet et al. 2011, A&A 527, 122

HD 47129 O8III/I + O7.5 V/III

Non-radial pulsations

Mahy et al. 2011, A&A 525, 101

HD 46150 O5V – HD 46223 O4V – HD 46966 O8.5V

Red noise of physical but unclear origin  
in the three hottest stars

Blomme et al. 2011, A&A 533, 4

# OB and Be stars in the CoRoT EXO fields

A lot of B and Be pulsators identified thanks to

- tremendous work of classification  
of the CoRoT light curves (talk Jonas Debosscher, Sarro et al. 2013, A&A 550, 120)
- spectra of VLT Flames LPs (PI Coralie Neiner)  
~50 Be stars and ~200 B stars

Candidate B pulsators from IR Degroote et al. 2009, 506, 471

Study of the Be star CoRoT-ID 102761769 Emilio et al. 2010, A&A 522, 43

Spectroscopic analysis of 25 Be stars Semaan et al. 2013, A&A 551, 130

# Hot stars in the whole CoRoT mission

**Very successful!**