

Hot Stars

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What has been discovered with CoRoT I & II ?

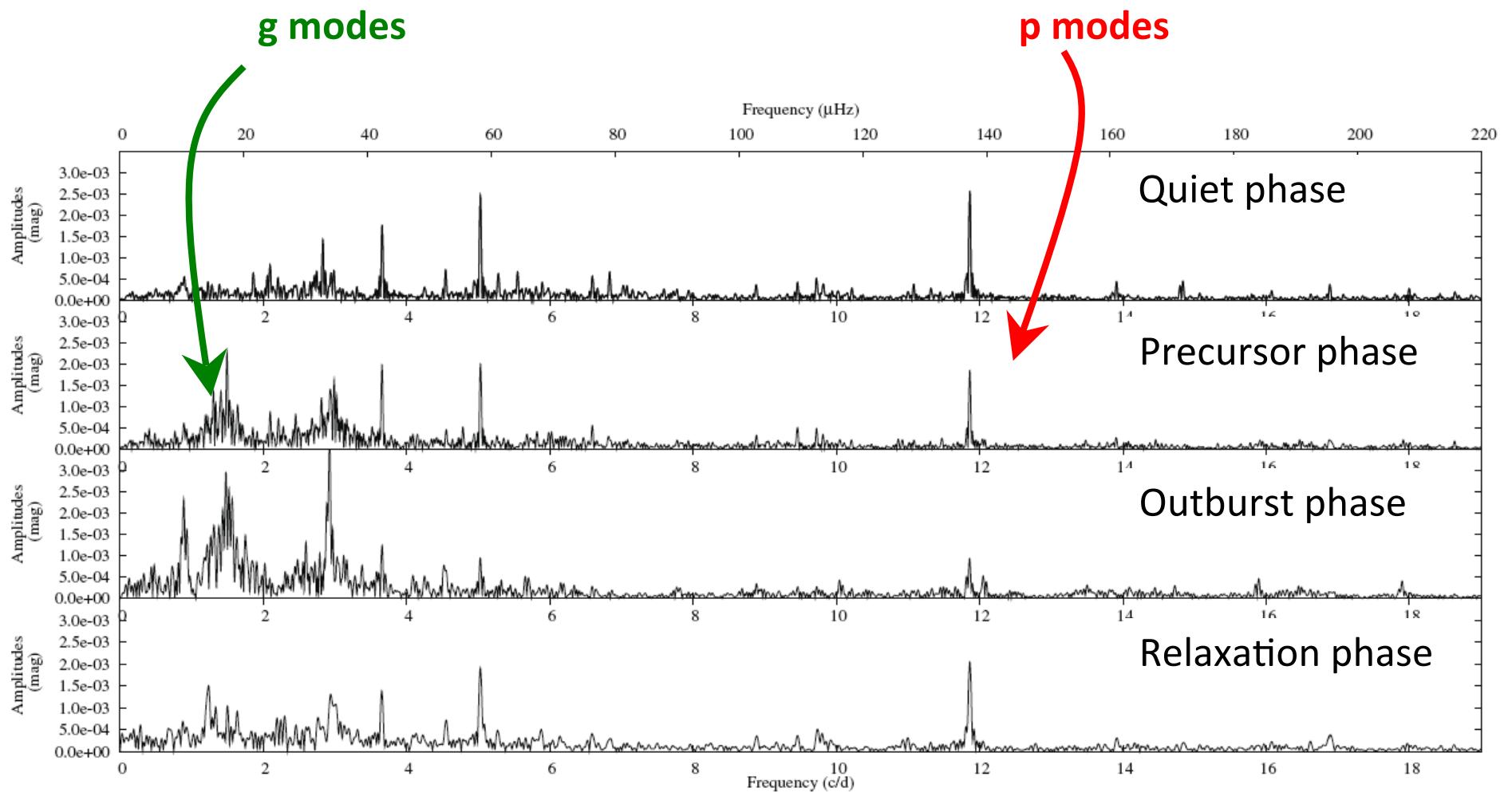
- ✓ New class of low amplitude B-type pulsators

Degroote et al. 2009, 2011

- ✓ Correlation outburst/pulsation in Be stars

Huat et al. 2009; Floquet et al. 2009

Correlation outburst/pulsation in a Be star



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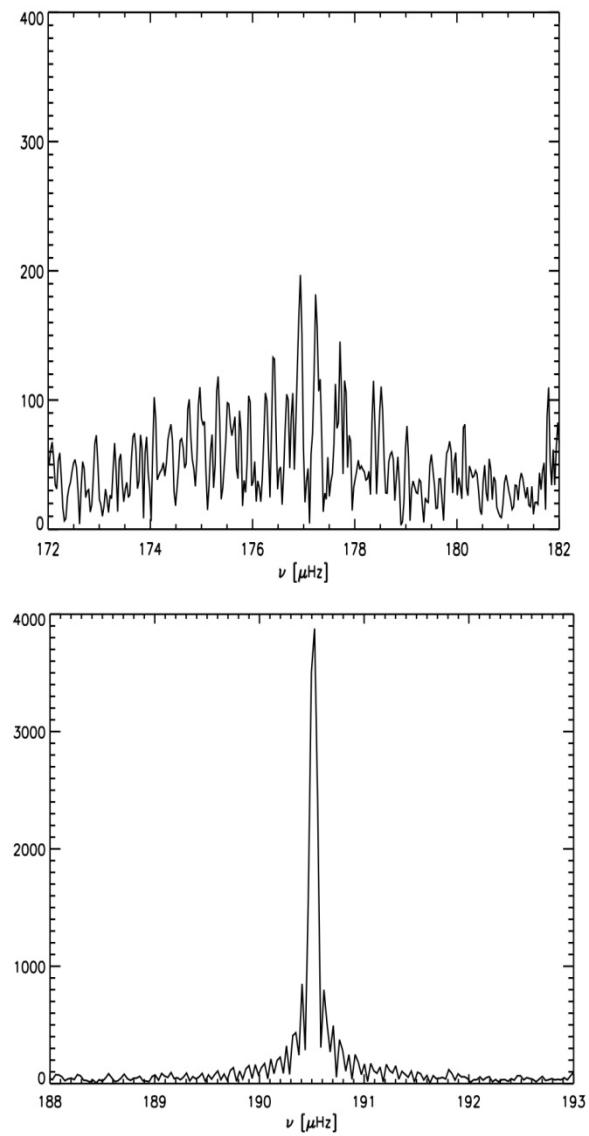
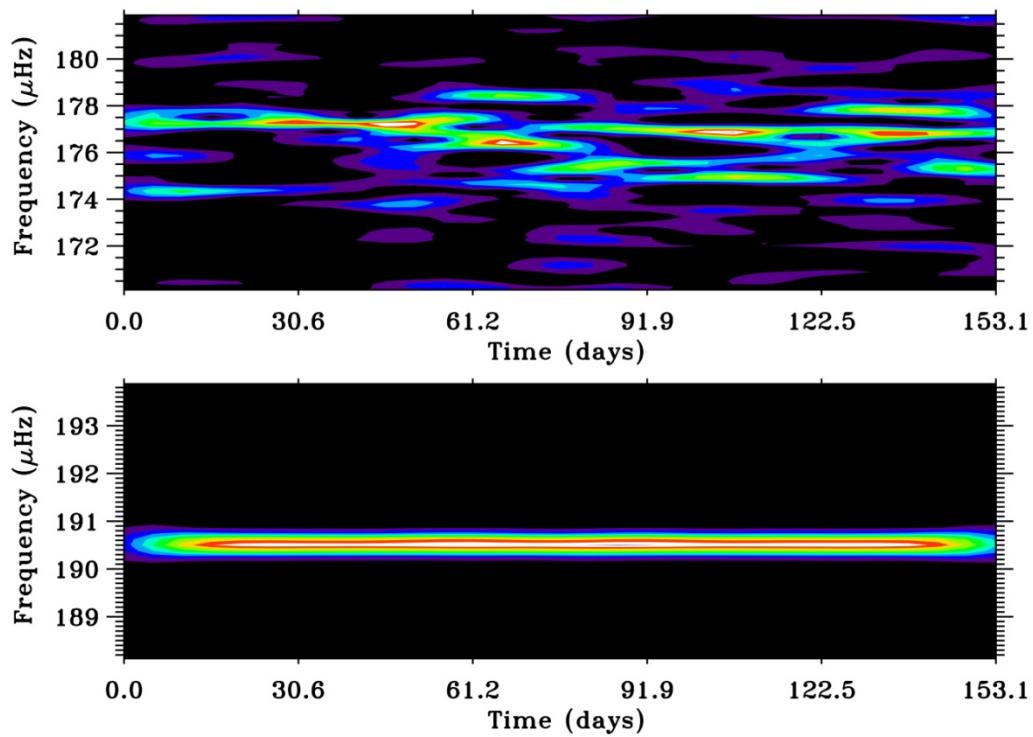
- ✓ Correlation outburst/pulsation in Be stars

Huat et al. 2009; Floquet et al. 2009

- ✓ Solar-like oscillations in B and O stars

Belkacem et al. 2009; Degroote et al. 2010; Blomme et al. 2011

HD 180642 – a chimera



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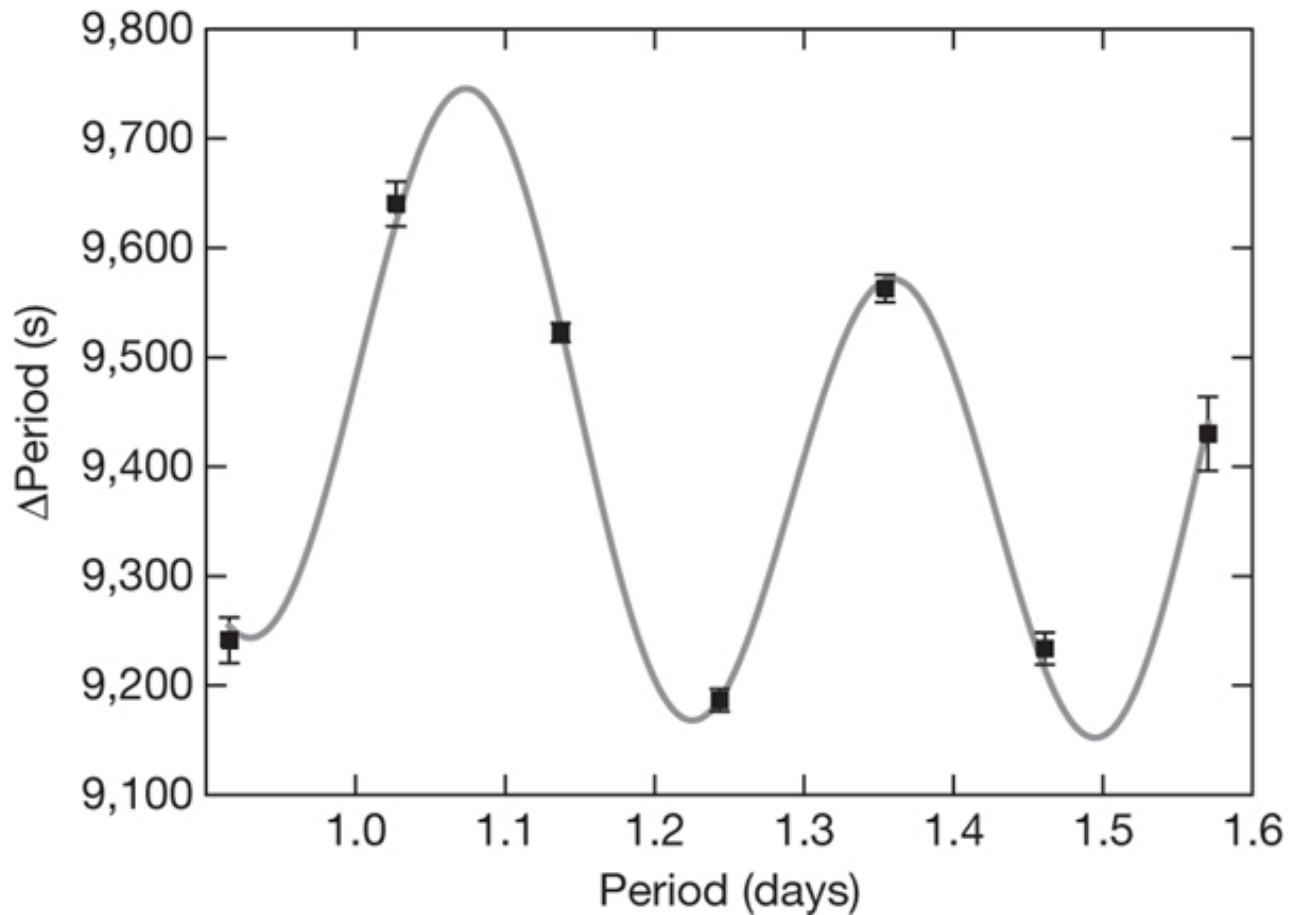
- ✓ Red noise in O stars

Blomme et al. 2011

- ✓ Deviation from the mean period spacing in a B3V star

Degroote et al. 2010; Miglio et al. 2008

Deviation from a mean period spacing in a B star



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- ✓ Periodic mass loss episodes due to oscillations Aerts et al. 2010

Science with CoRoT III

1. Seismo field

- ✓ Effect of stellar oscillations on mass loss
 - *Correlation outburst/pulsation in Be stars*
 - *Detection of strange modes*
- ✓ Effect of rotation on stellar structure and pulsations
 - *Extra-mixing*
 - *Differential rotation in O/B and Oe/Be stars*
- ✓ Effect of magnetic fields on stellar structure and pulsations
 - *HD 47777 magnetic Herbig star*
 - *V2052 Oph magnetic β Cep star*
- ✓ Role of the iron convective layer in O and B stars
 - *Origin of red noise*
 - *Solar-like oscillations*
 - *Driving mechanism*
- ✓ Hot giants and supergiants
 - *Long period oscillations ~ 10 days or more*
 - *Excitation of g-modes*
 - *Detection of strange modes*

Science with CoRoT III

2. Exo field

- ✓ Observational instability strips in the HR diagram
- ✓ Relation between rotation and pulsation spectrum
- ✓ Populations of hot stars center/anticenter
- ✓ Massive stars in clusters
 - *Pulsation spectrum/age*
 - *Pulsation spectrum/metallicity*
- ✓ Rotation and spots
 - *Fossile magnetic dipole field?*
 - *Dynamo from sub-photospheric convective layer ?*

Specificity CoRoT/Kepler

Kepler



O stars **NO**
Early B stars **NO**
Late B stars **a few**
Early supergiants **NO**

Most



2 weeks observing time

Ground



mmag/ μ mag

Proposition of new fields

- ❖ *B and Be stars – Top priority β Cep V2052 Oph*
Herbig star HD 47777
- ❖ *Hot giants*
- ❖ *Supergiants*
- ❖ *Eclipsing and spectroscopic binaries*

Proposition of reobservation

- ❖ *HD 49330 – Hot Be star*
New full outburst sequence (2.5 months)
- ❖ *HD 50230 – Hybrid B pulsator*
*Frequency spacing connected to
rotational splitting ?*

Proposition of new fields

- ❖ *B and Be stars – Top priority V2052 Oph*
Herbig star HD 450230
- ❖ *Hot giants*
- ❖ *Supergiants*
- ❖ *Eclipsing and spectroscopic binaries*

Propositions for reobservation

- ❖ *HD 49976 – Hot Be star*
New full outburst sequence (2.5 months)
- ❖ *50230 – Hybrid B pulsator*
Frequency spacing connected to rotational splitting ?