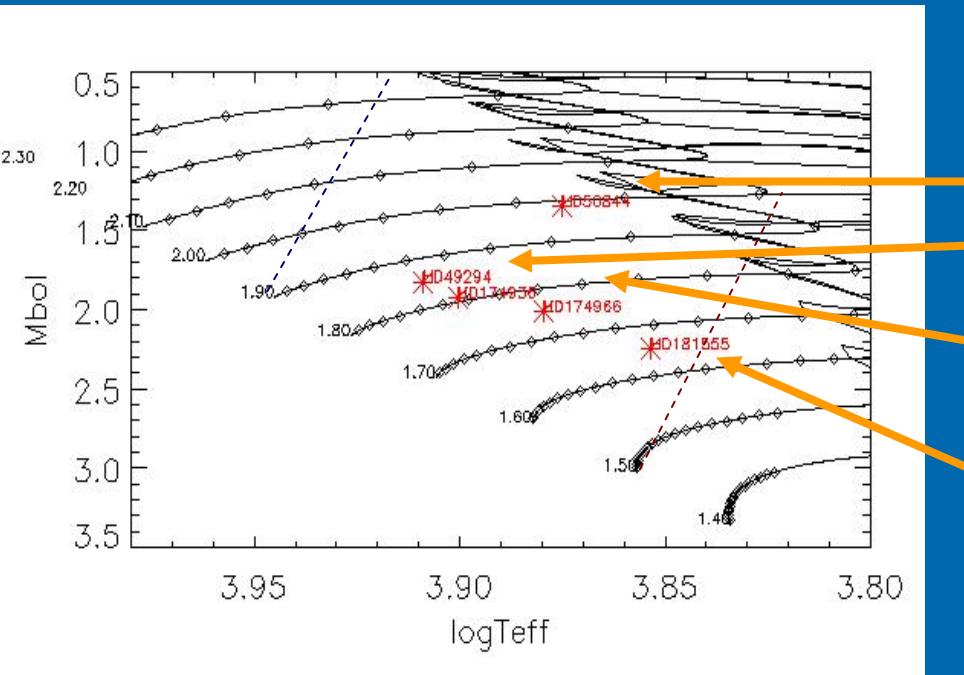


What do CoRoT data reveal about delta Scuti stars?

HD181555

E. Michel, E. Poretti, R. Garrido, L. Lefevre, L.
Mantegazza, E. Rodriguez, CoRoT Builders,...

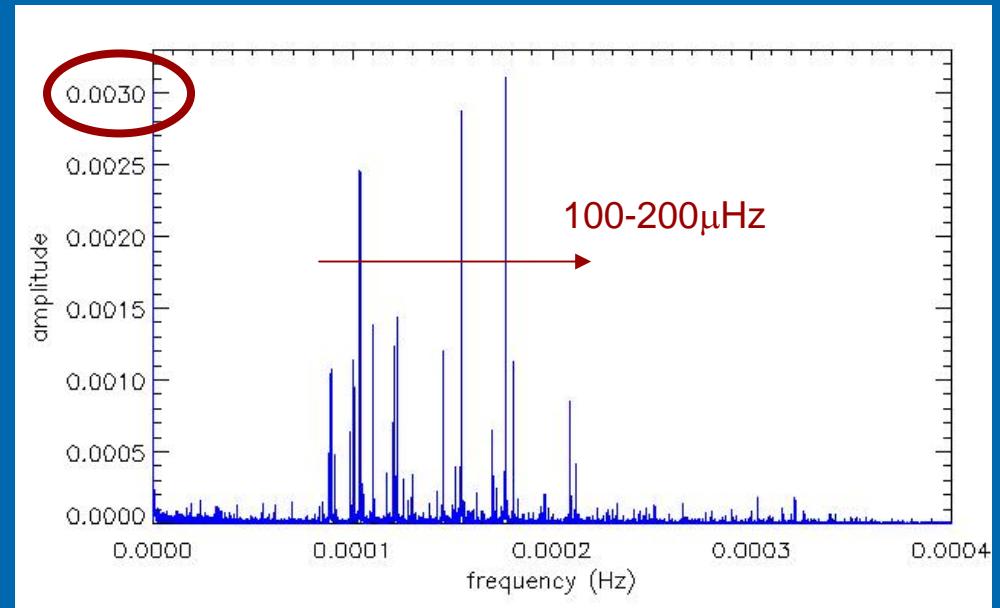
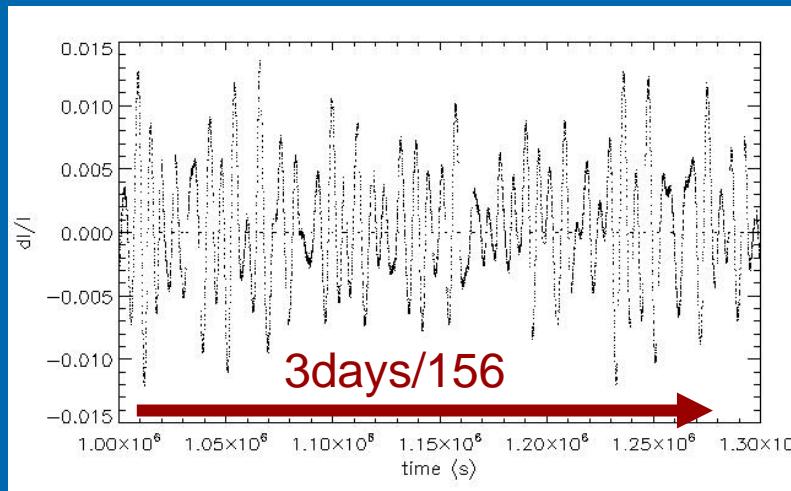
Delta Scuti stars observed with CoRoT



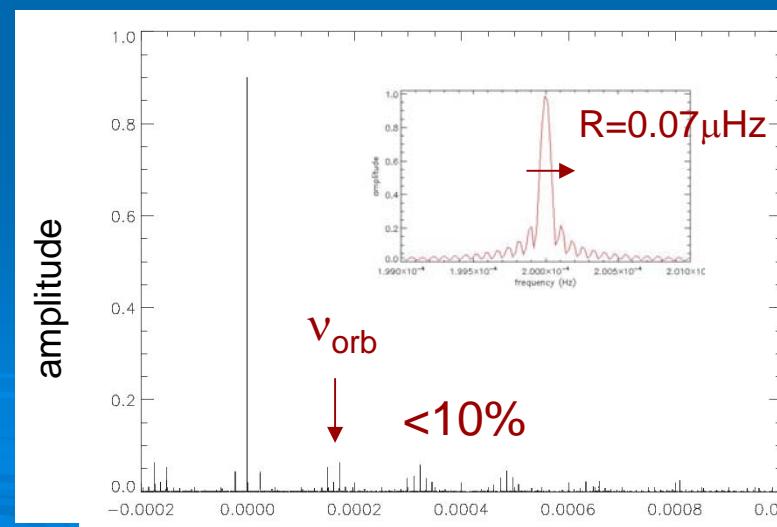
Run	mV	Vsin <i>i</i>	
IR01	9.1	64	Poretti et al.
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...	

- > What is below 10-4 amplitudes?: How many peaks? Which distribution in amplitude? → mechanism ruling amplitudes?
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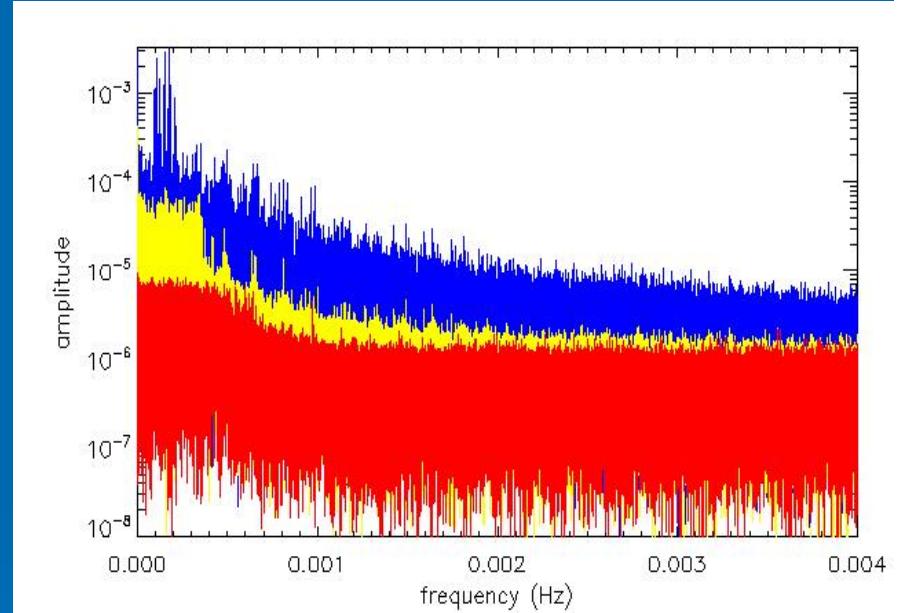
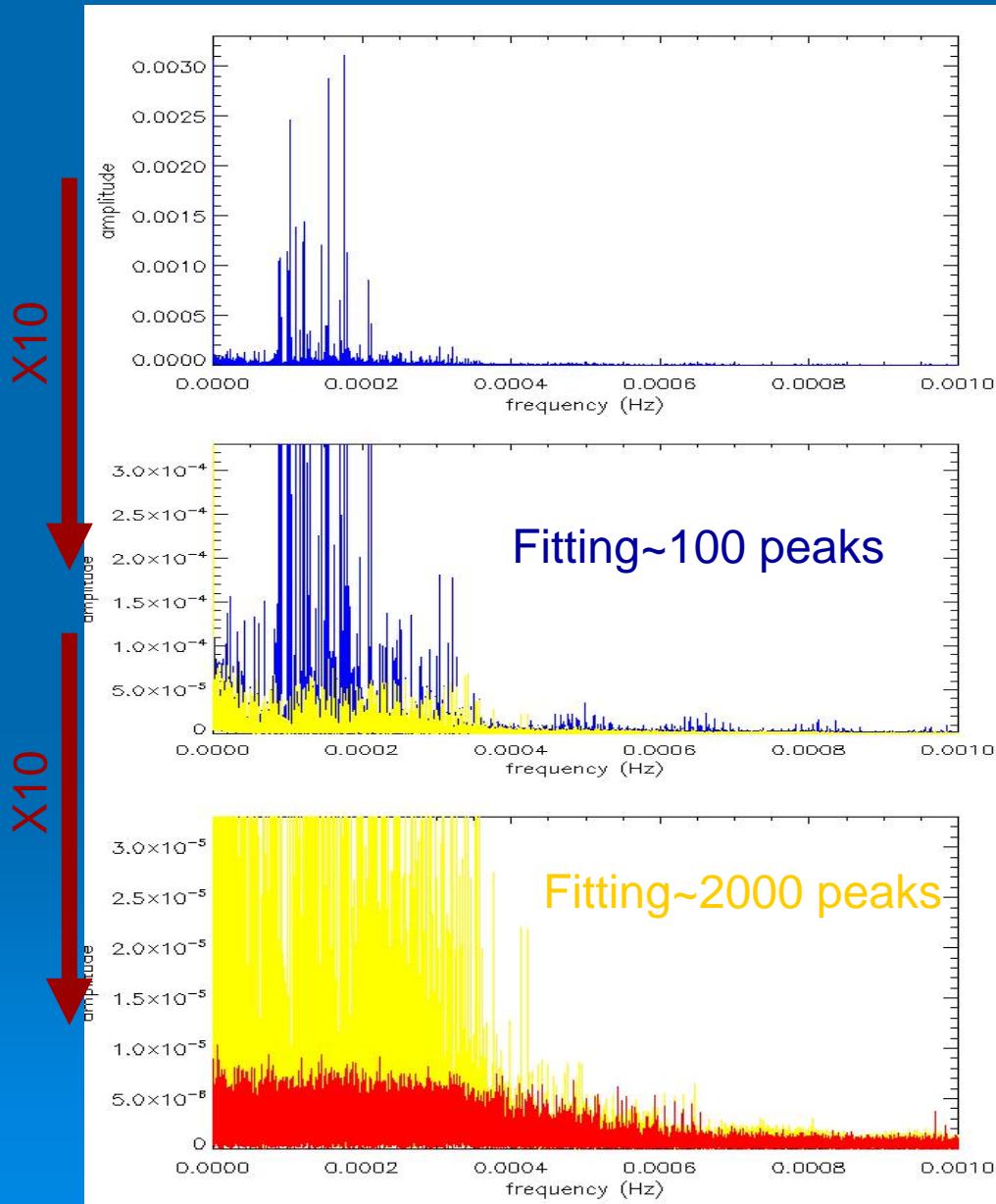
HD181555- The CoRoT data:



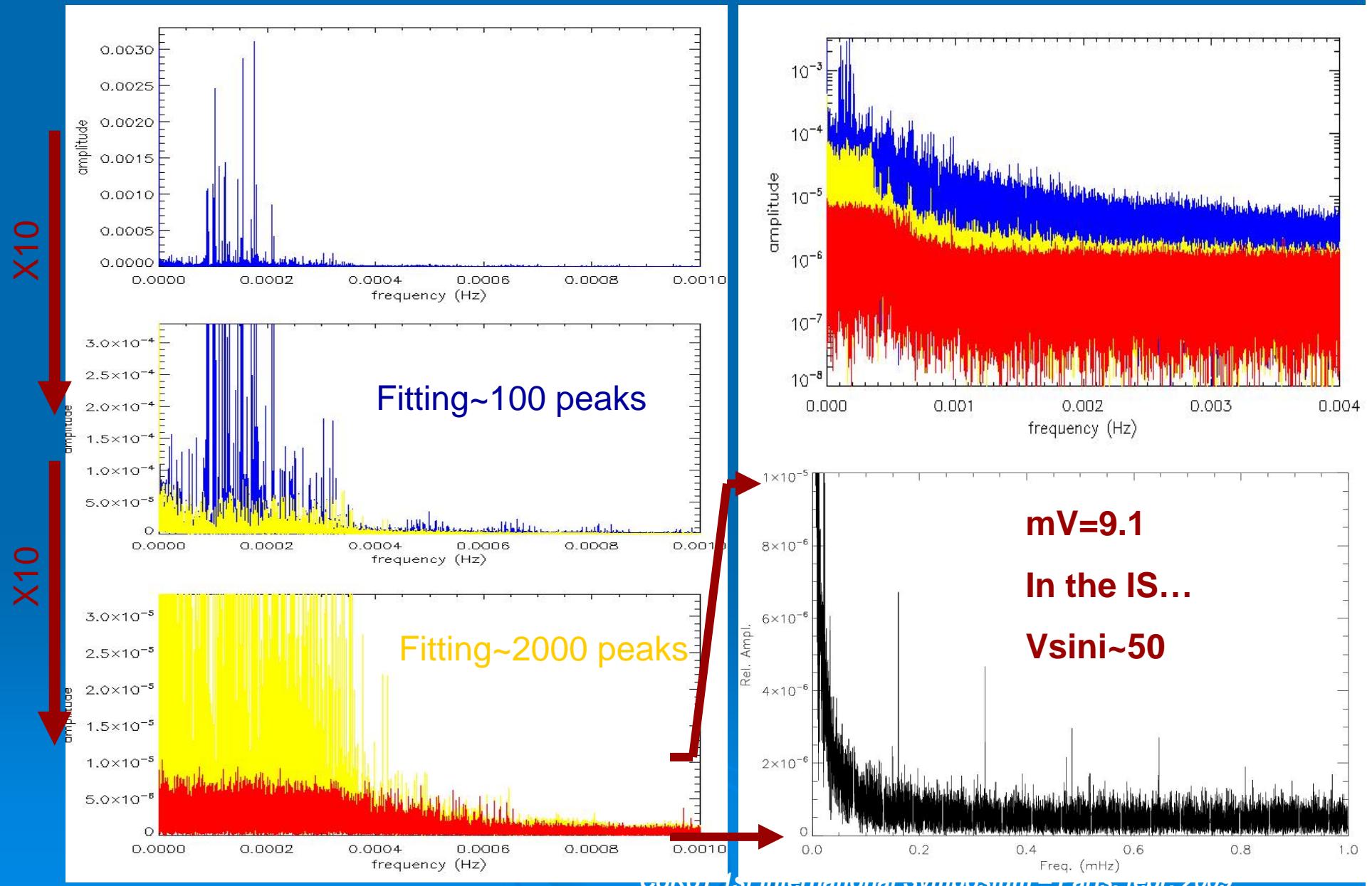
- 156 days of data
- 91% effective duty cycle



Analysis/nonlinear sinewave fitting

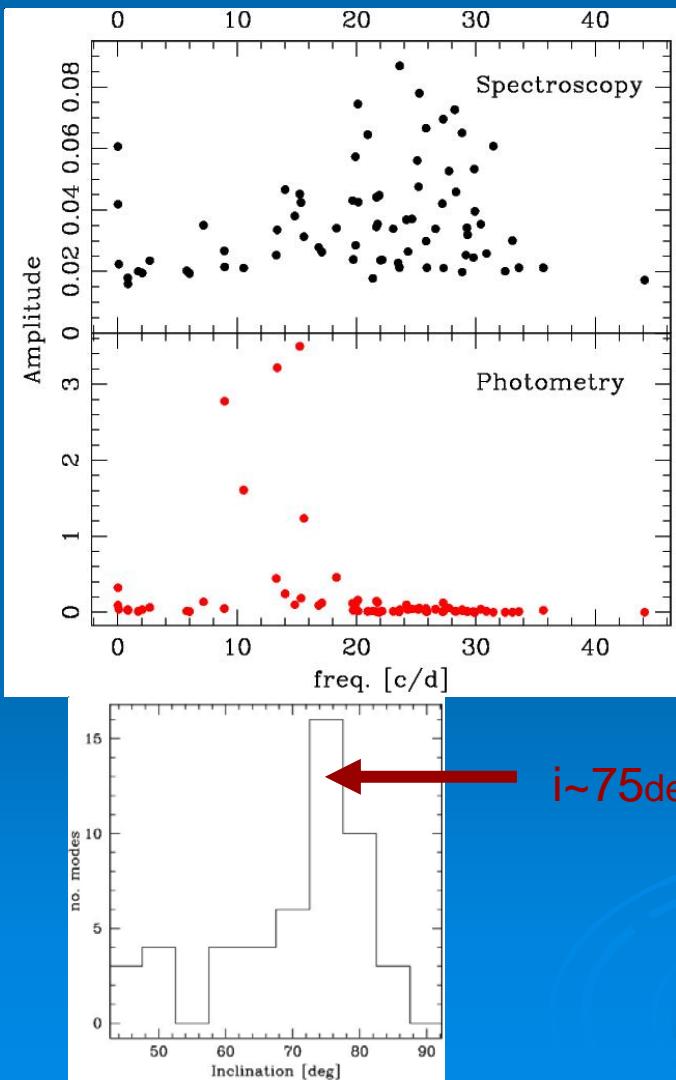


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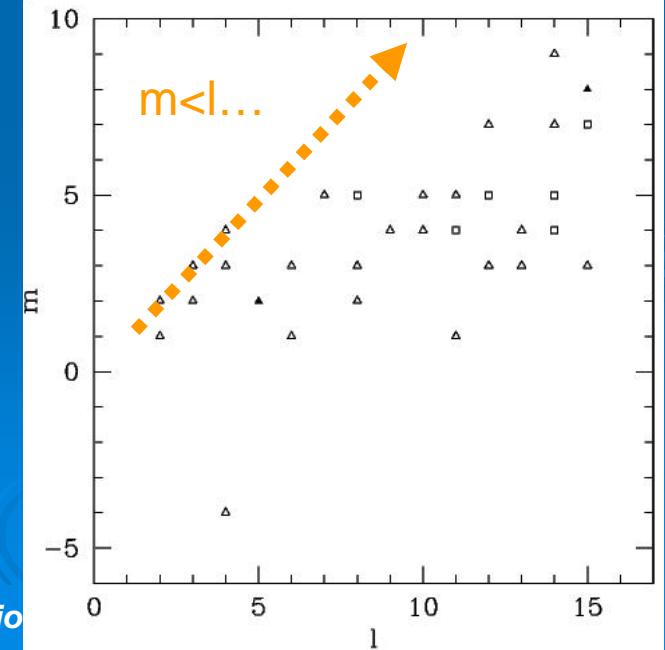
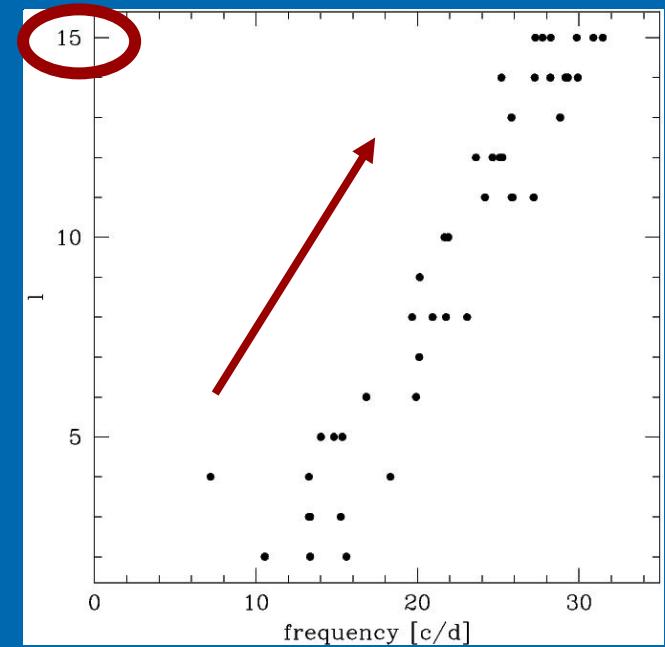


Spectroscopic data Analysis:

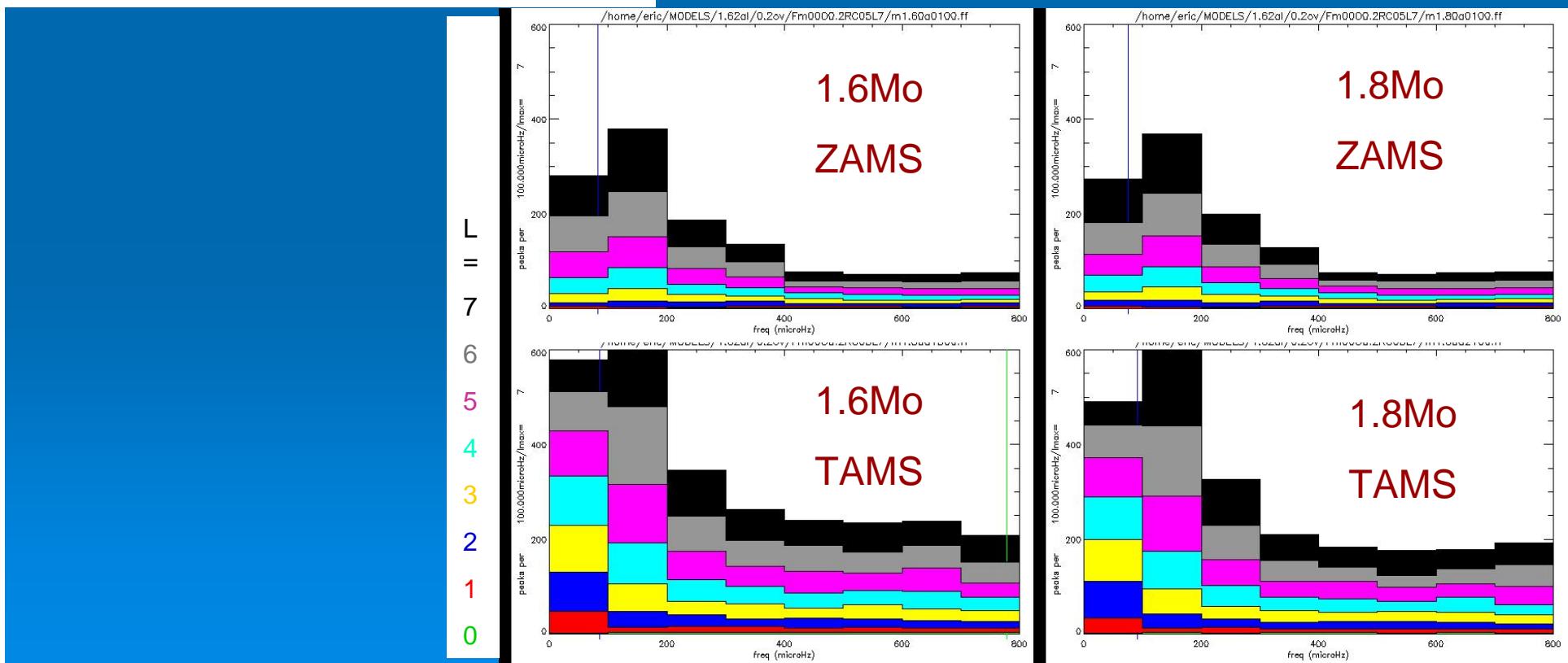
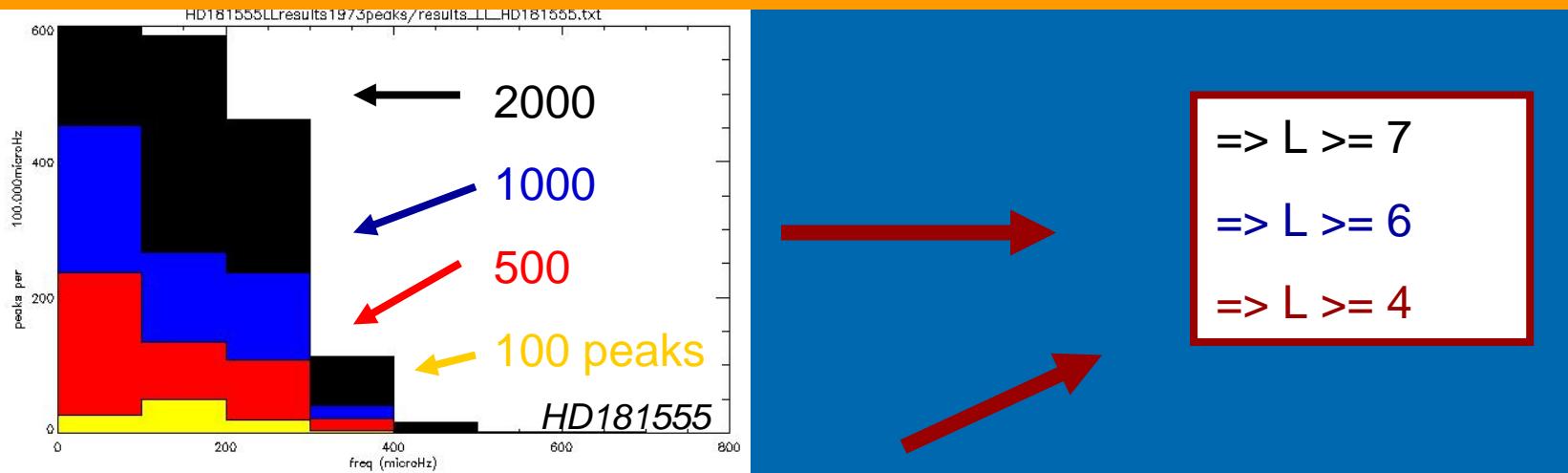
688 spectrograms (FEROS, FOCES, SOPHIE) \rightarrow mean profile
(LSD code (Donati et al. 97)) \rightarrow analyse variations across
mean profile (FAMIAS code (Zima 2008))



74 peaks detected
(68 compatibles)

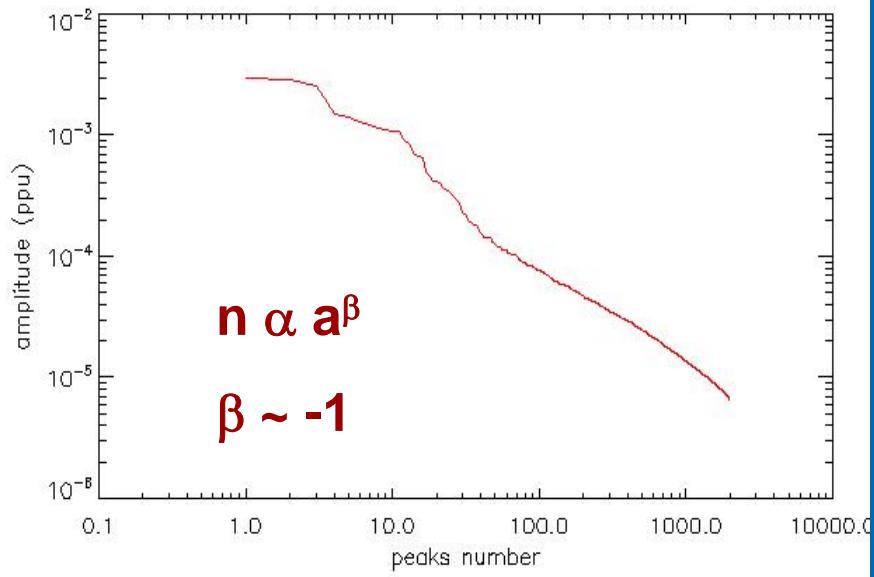


Peaks density in frequency:

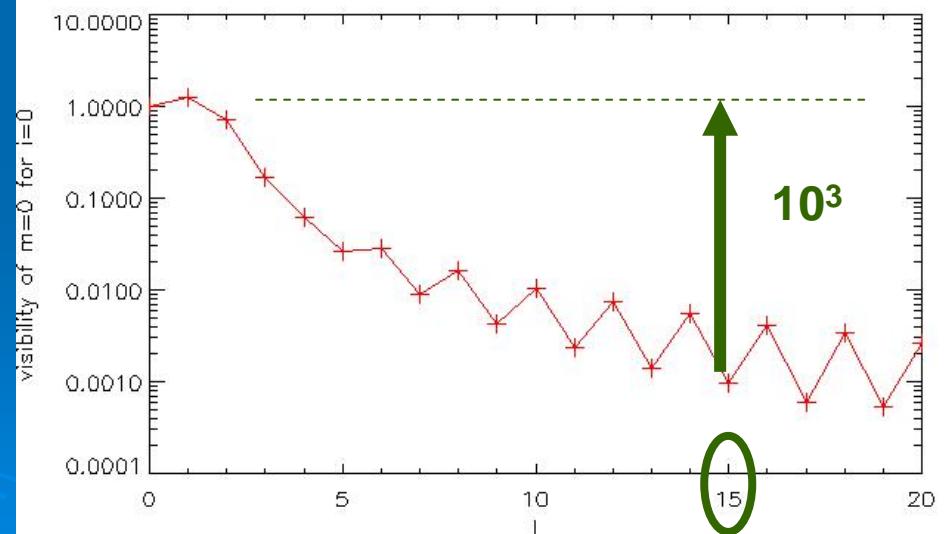


Distribution in amplitudes:

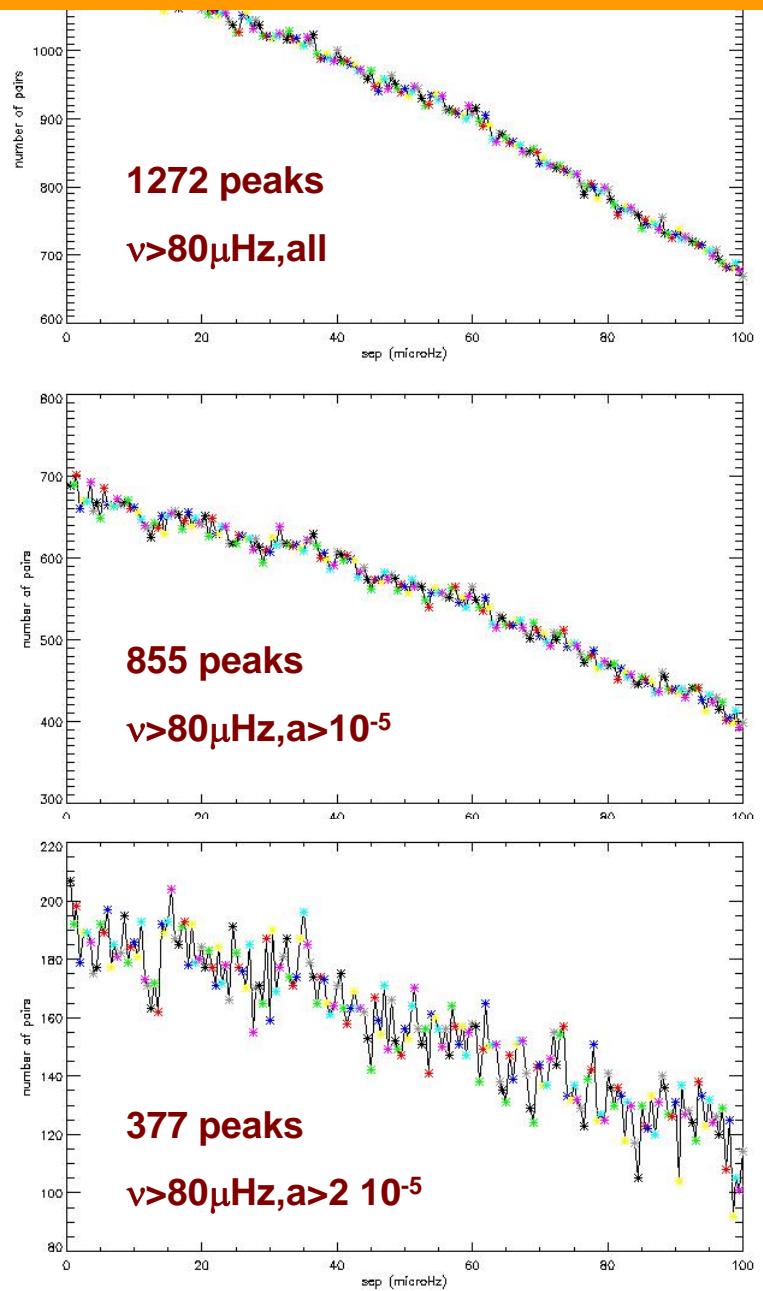
Distribution of the amplitudes



Photometric visibility (at $i=0$, upper limit)



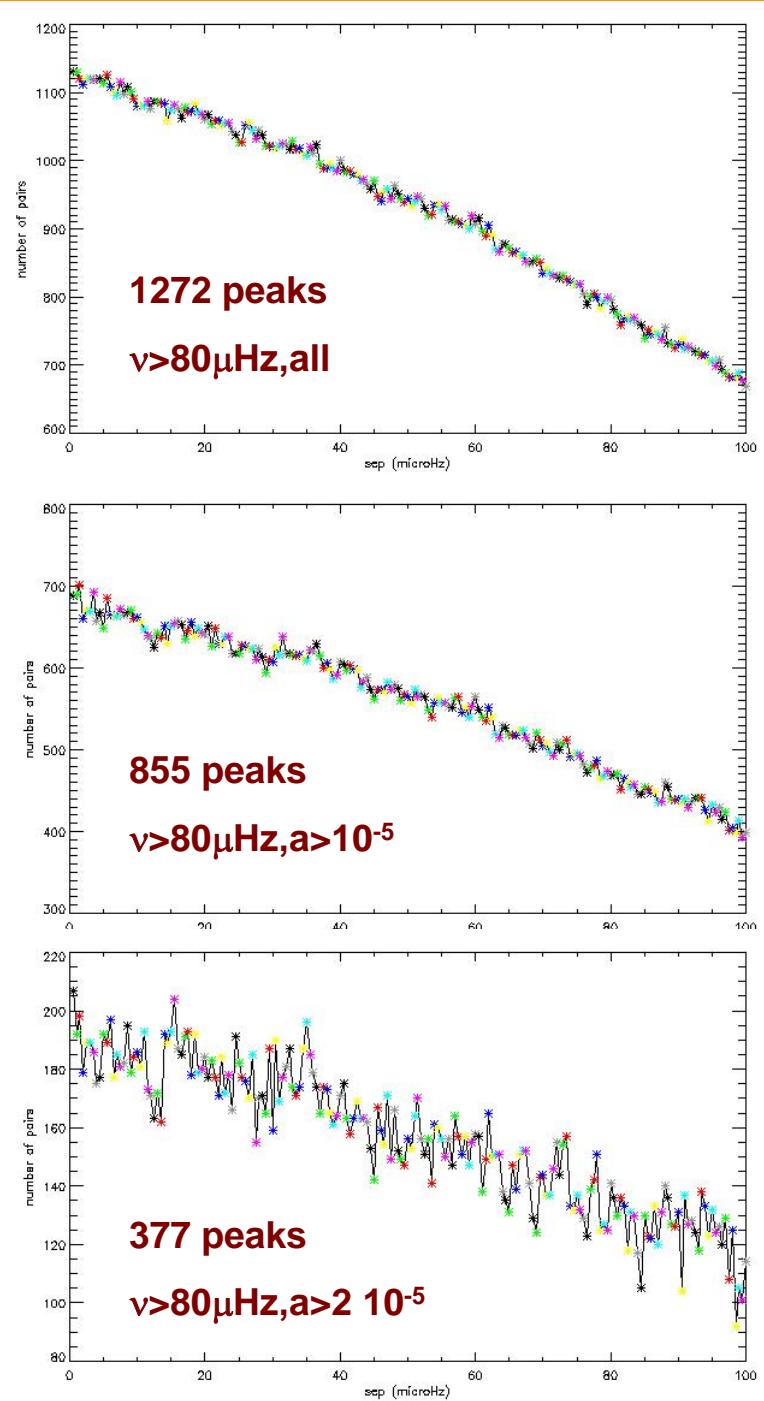
Search for specific features in frequency:



Search for Pairs
(resolution $0.5 \mu\text{Hz}$)

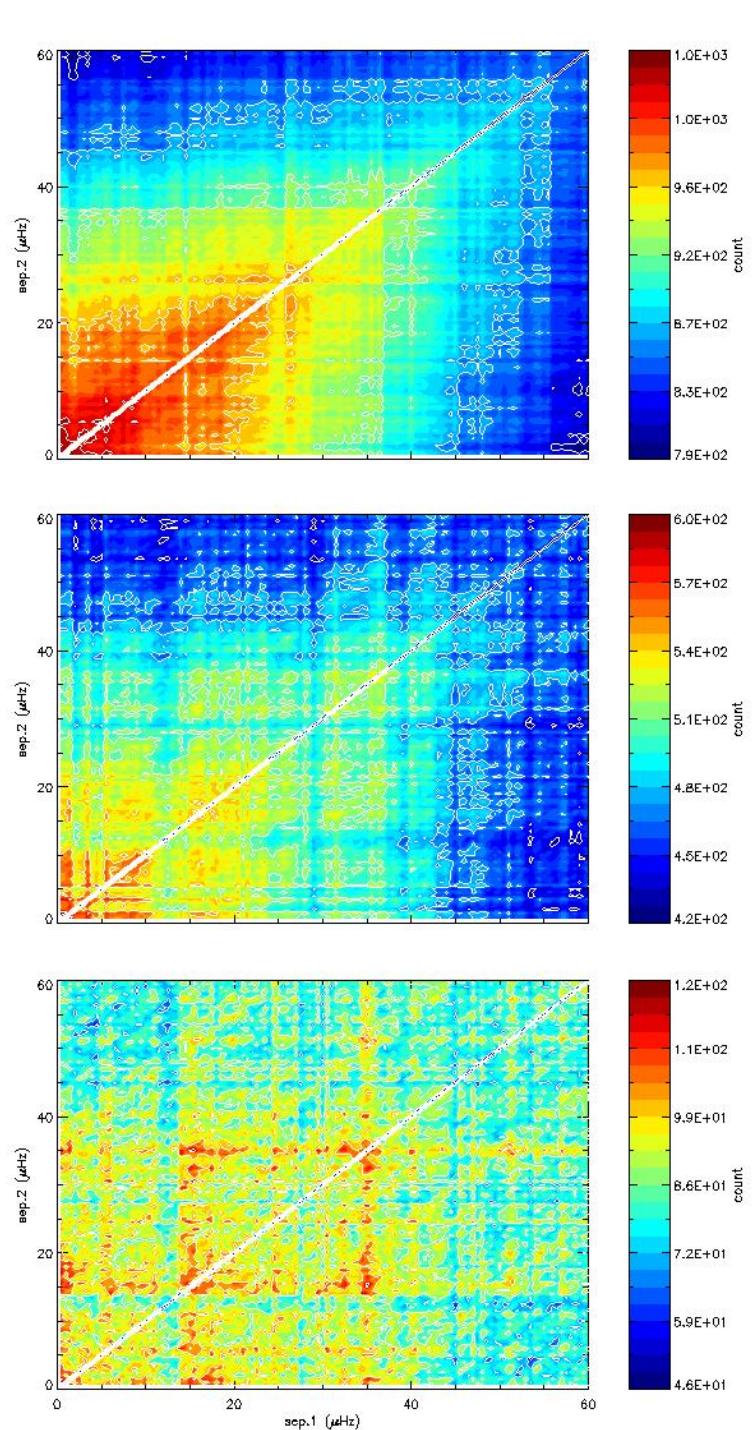
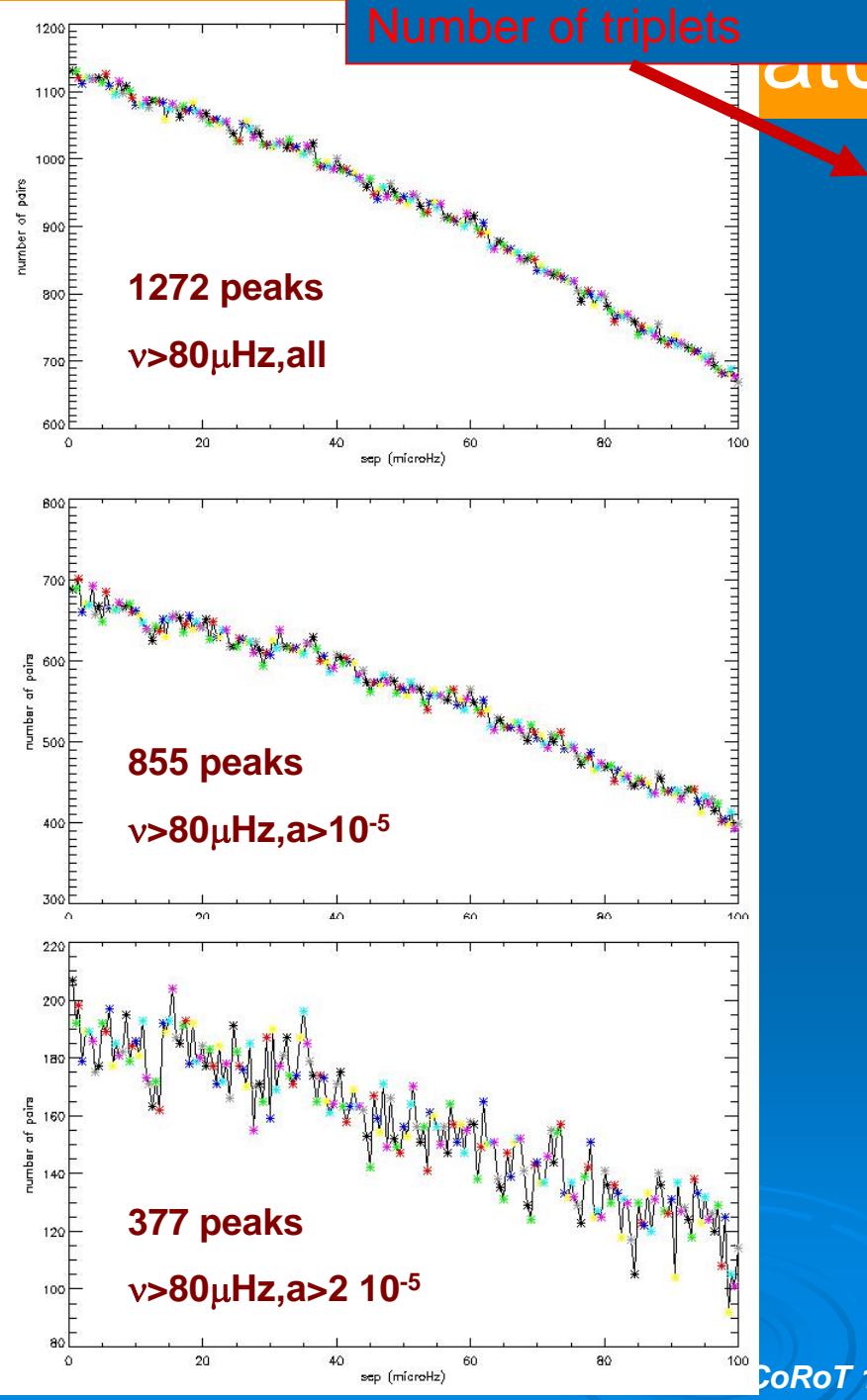
Se

atures in frequency:



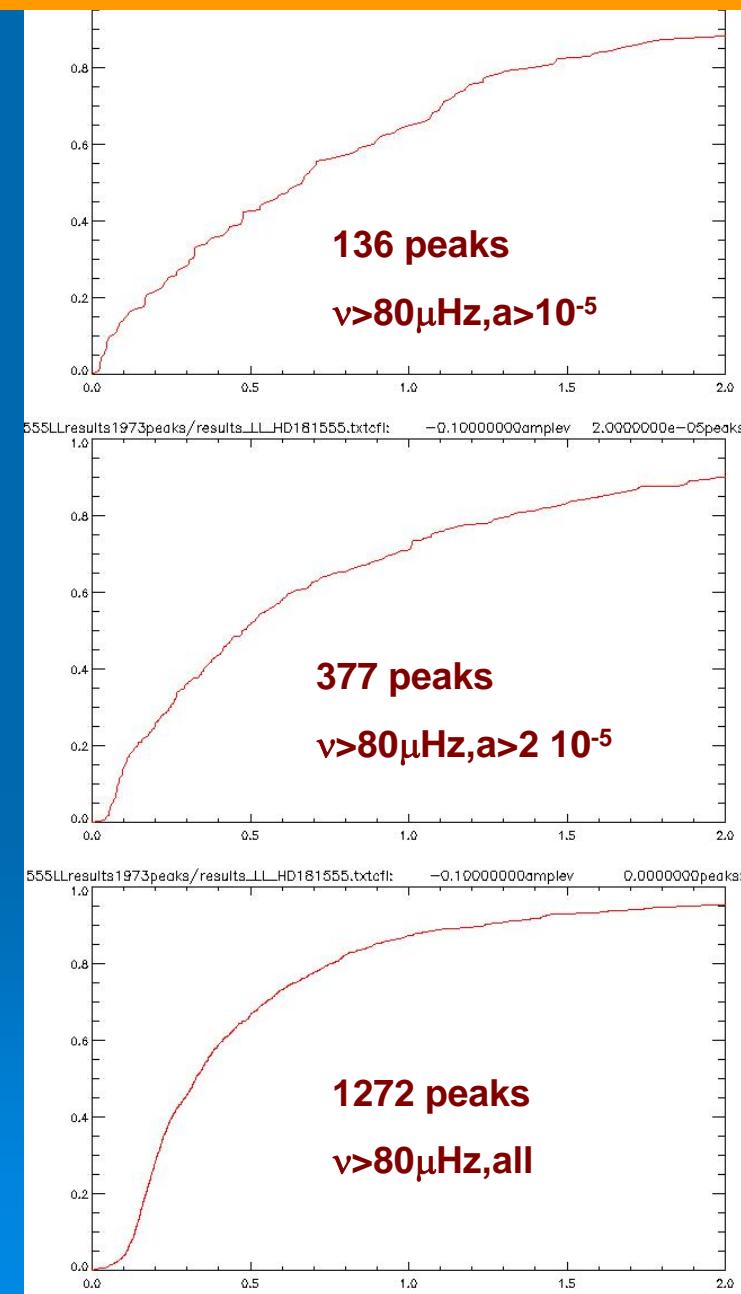
Search for Pairs (resolution $0.5 \mu\text{Hz}$)

Se

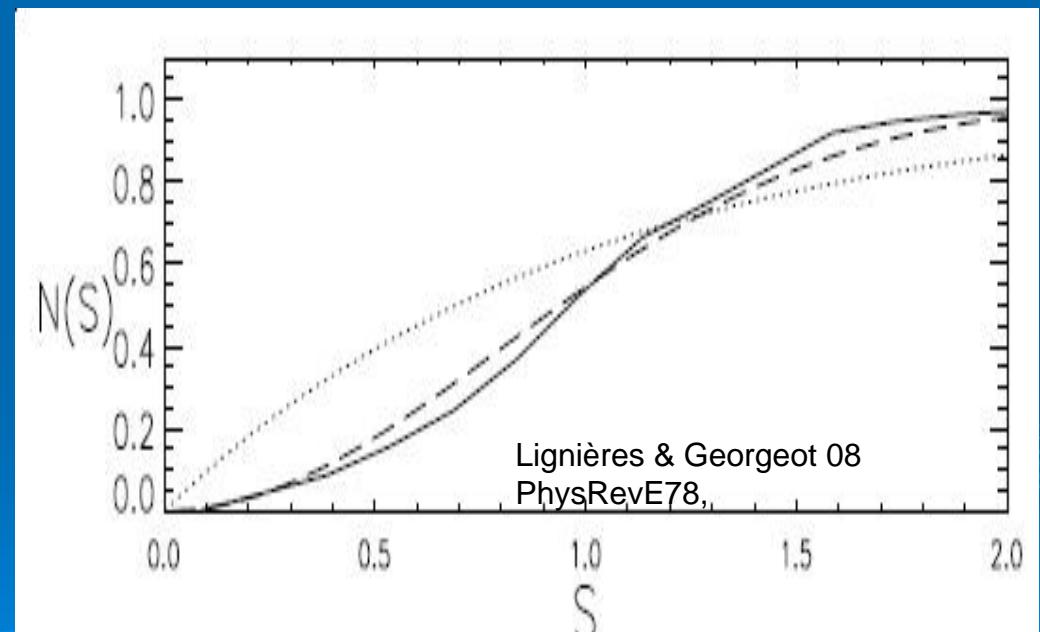


CoRoT

Search for specific features in frequency:



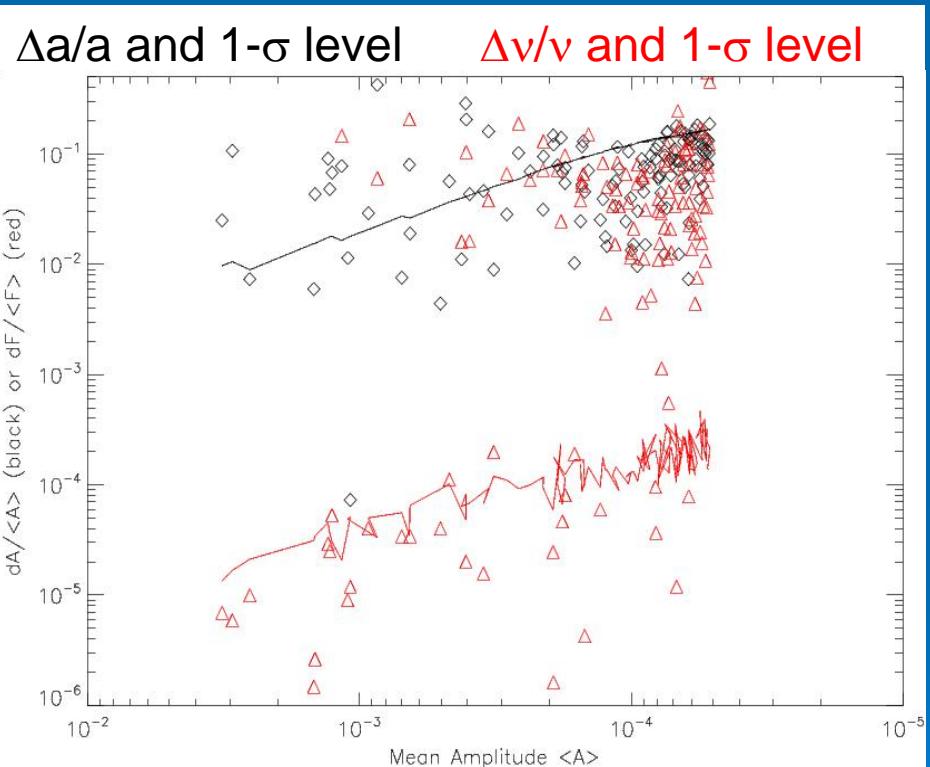
Search for
signature of 'chaotic modes'
In the distribution of consecutive
separations



Stability of frequencies and amplitudes:

3 consecutive subsets of 50days:

Comparison of the analysis output differences (200peaks)
Subset1-Subset3: **in frequency**; in amplitudes



Amplitudes:

At high amp: some higher than **$3-\sigma$ level**

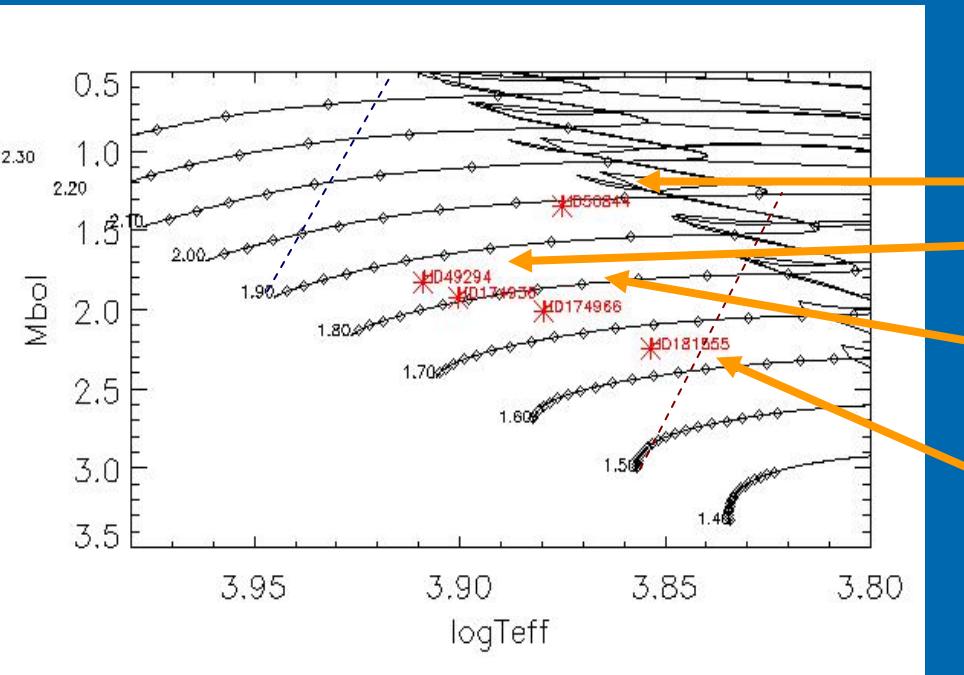
But NB: $\Delta a/a \sim 10^{-2}-10^{-1}$ for $a \sim 10^{-3}$ -i.e.
 $\Delta a \sim 10^{-5}-10^{-4}$!!!!

Frequencies:

At high amp.: $\Delta v/v$ (**$< 1-\sigma$ level**) and $\sim 10^{-5}-10^{-4}$ i.e. $\Delta v \sim 10^{-9}-10^{-8}$ Hz!!!!

At low amp.: $\Delta v/v \sim 10^{-2}-10^{-1}$ (**$>> 1-\sigma$ level**)
i.e. $\Delta v \sim 10^{-6}-10^{-5}$ Hz → misidentification

Delta Scuti stars observed with CoRoT



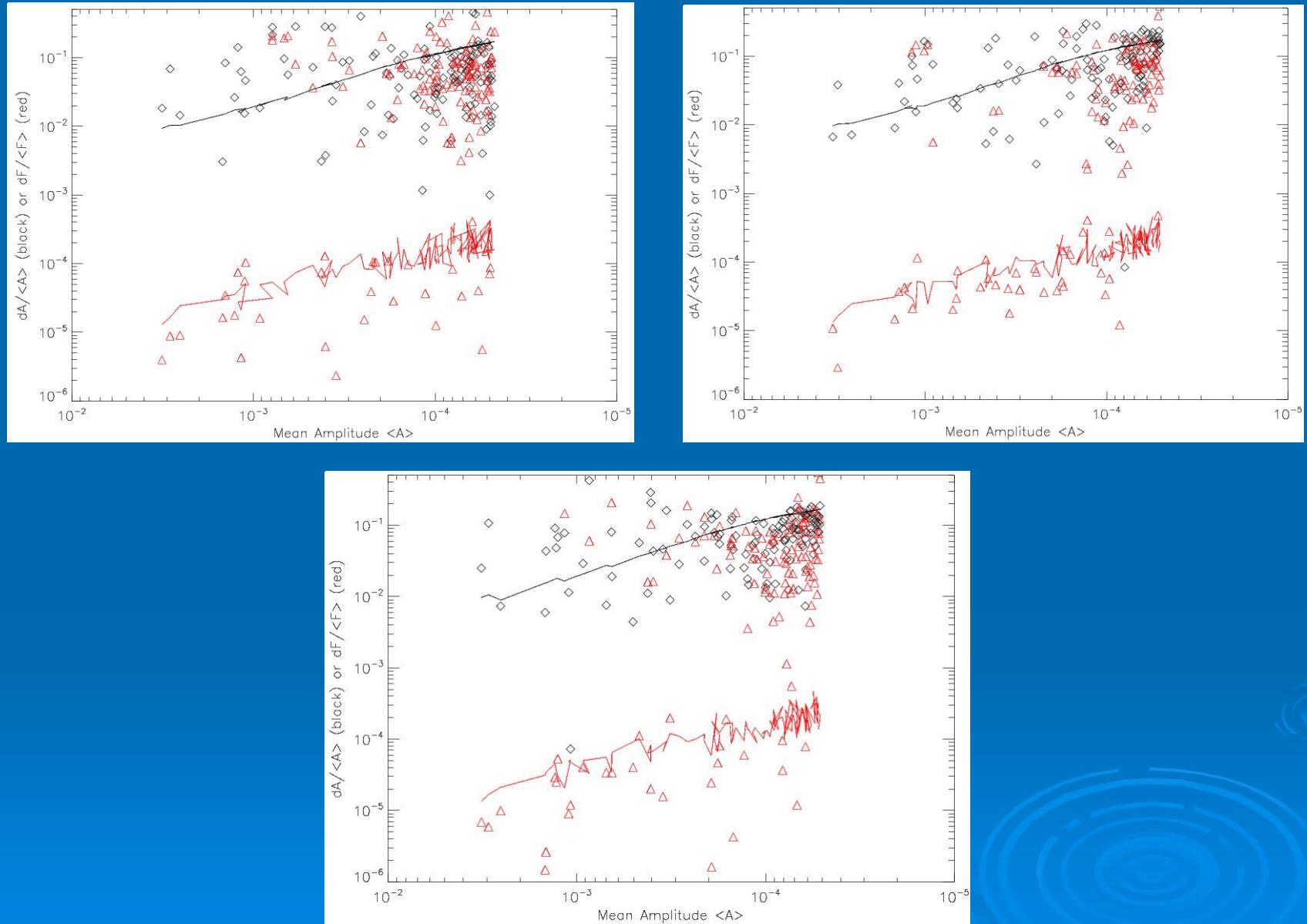
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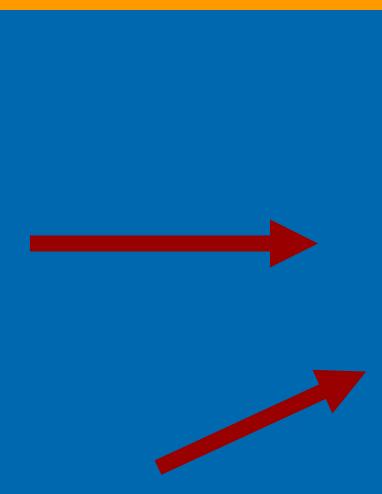
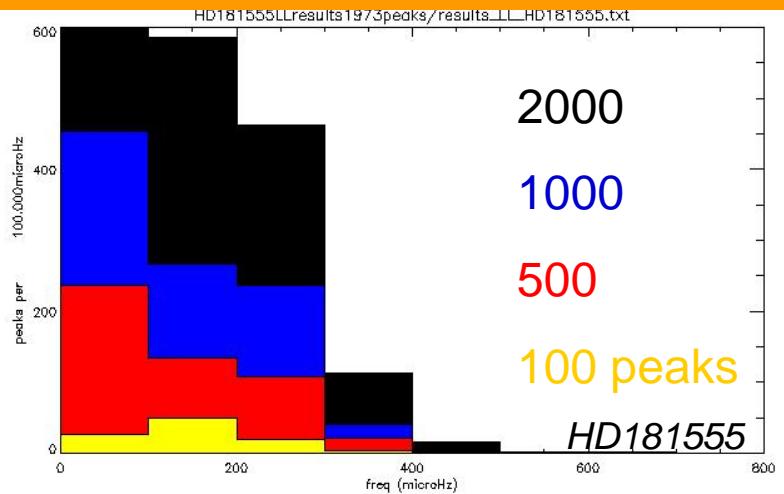


CoRoT 1st International Symposium – Paris, febr. 2009

Amplitude Stability over 150d



Peaks density in frequency:



$\Rightarrow L \geq 7$

$\Rightarrow L \geq 6$

$\Rightarrow L \geq 4$

