

# Переменность эмиссионных линий в оптическом спектре звезды Ве Хербига HD 200775

Бисярина А. П.  
Соболев А. М.  
Горда С. Ю.  
КАО УрФУ

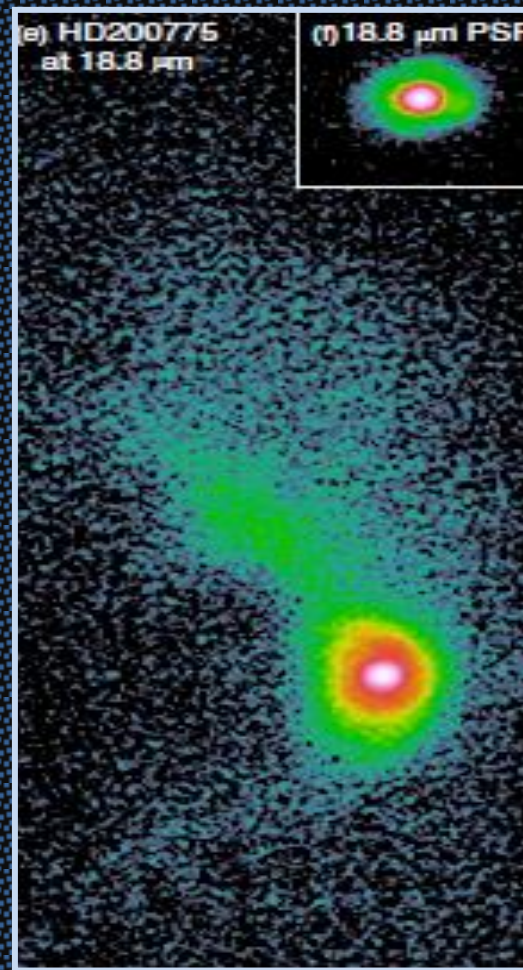
# HD 200775 (MWC 361, V380 Cep)

7,4<sup>m</sup> 430пк



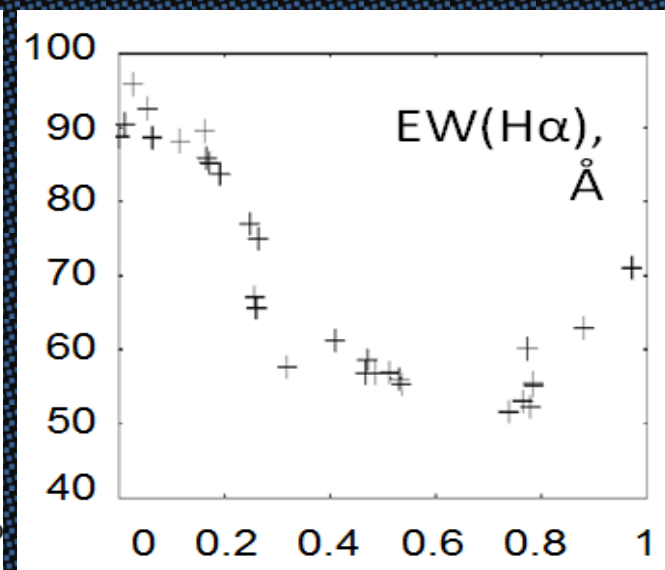
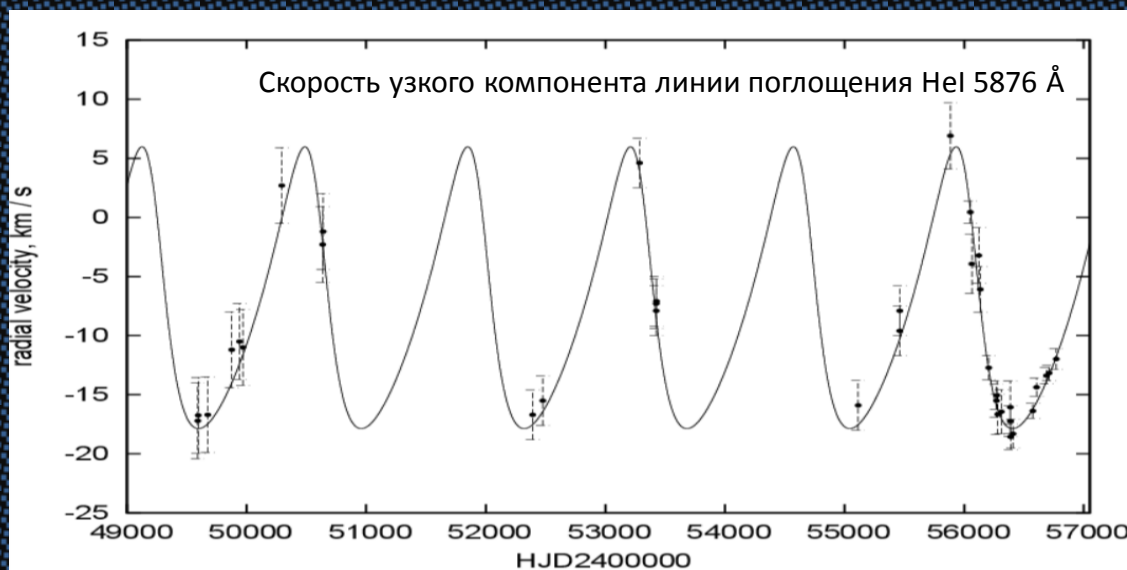
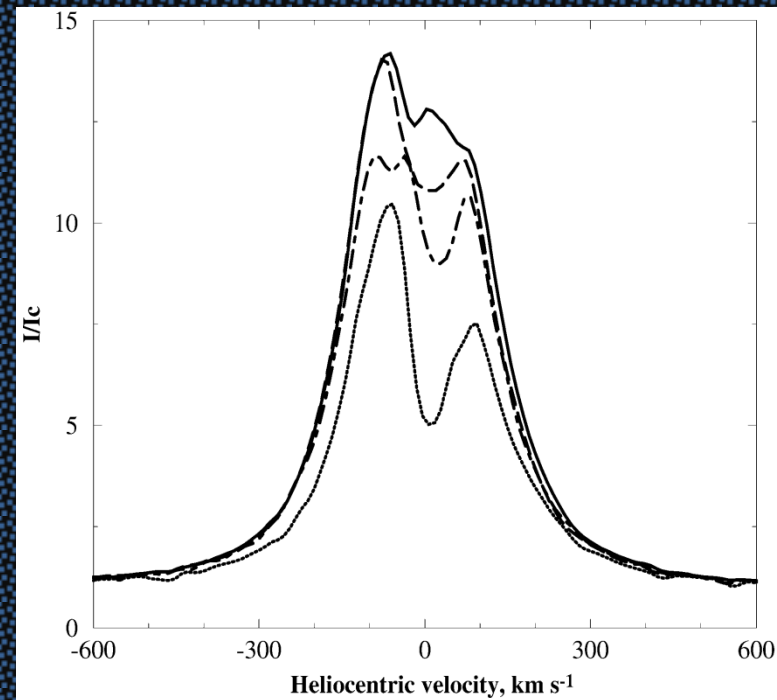
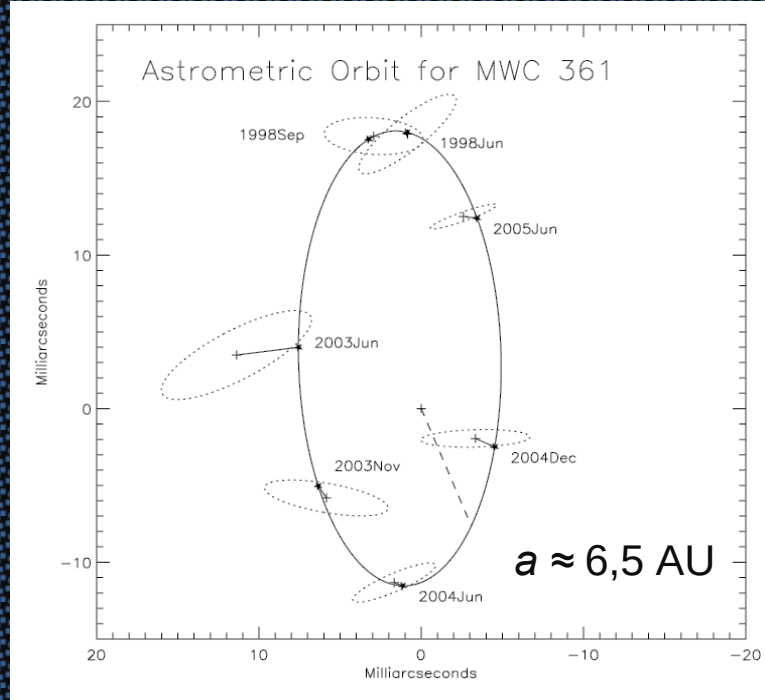
Туманность NGC 7023

Тонни Халлас



9.9×24.3 arcsec

Okamoto et al., *ApJ*, 706, 665 (2009)



$$P = (1361.3 \pm 2.2)^d$$

# Наблюдения

## **1.2-м телескоп КАО УрФУ** (2012- 2017)

Эшелле-спектрограф высокого разрешения ( $R = 15000, 30000$ )

*С. Ю. Горда, А. М. Соболев, А. П. Бисярина, С. А. Алексеева*

## **САО РАН БТА, 6-м – 08 октября 2013**

НЭС (Несмитовский эшелле-спектрограф) ( $R = 75000$ )

*М. В. Юшкин*

## **Данные из электронных архивов:**

**ОНР** (Observatoire de Haute-Provence, Франция): 1.93-м телескоп (1994-2011)

ELODIE ( $R = 42000$ ) SOPHIE ( $R = 40000$ )

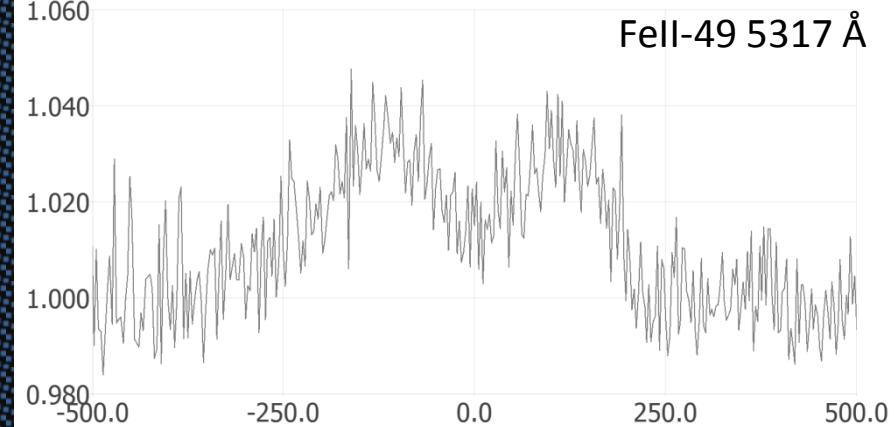
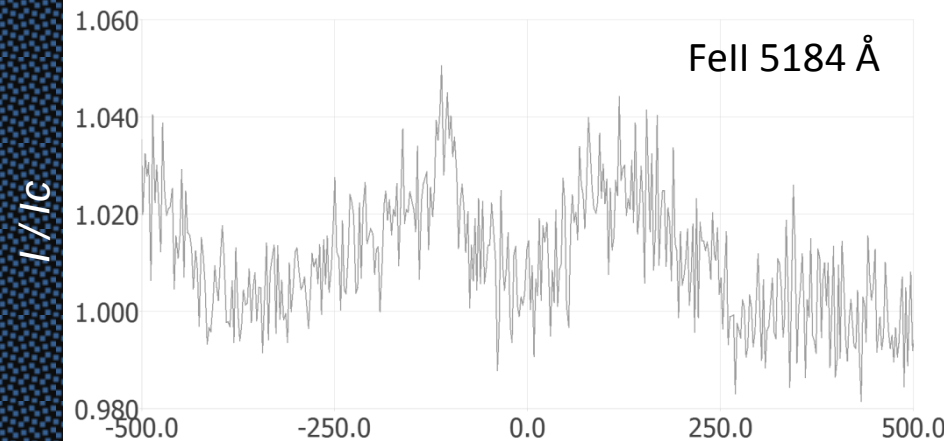
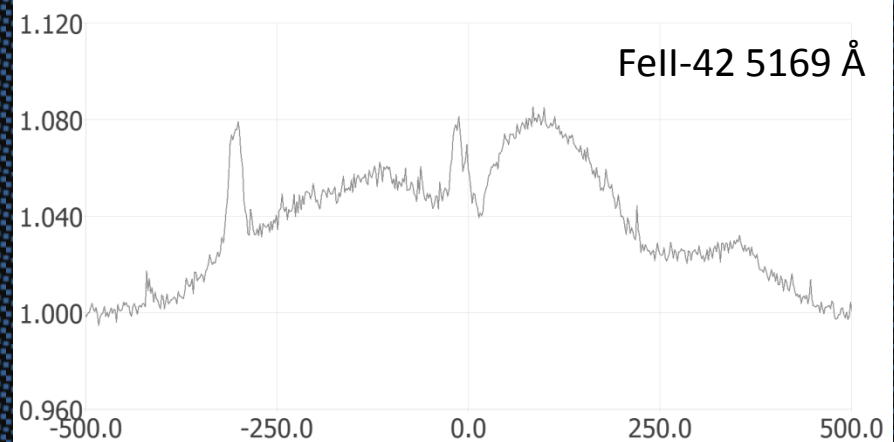
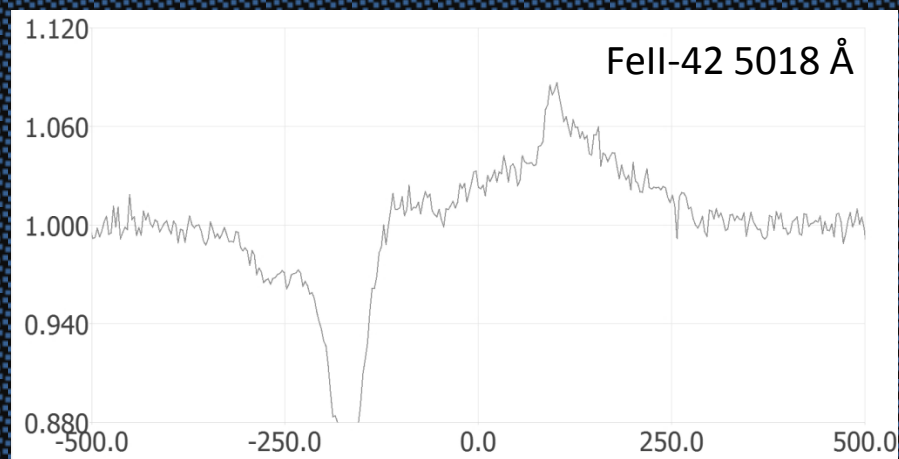
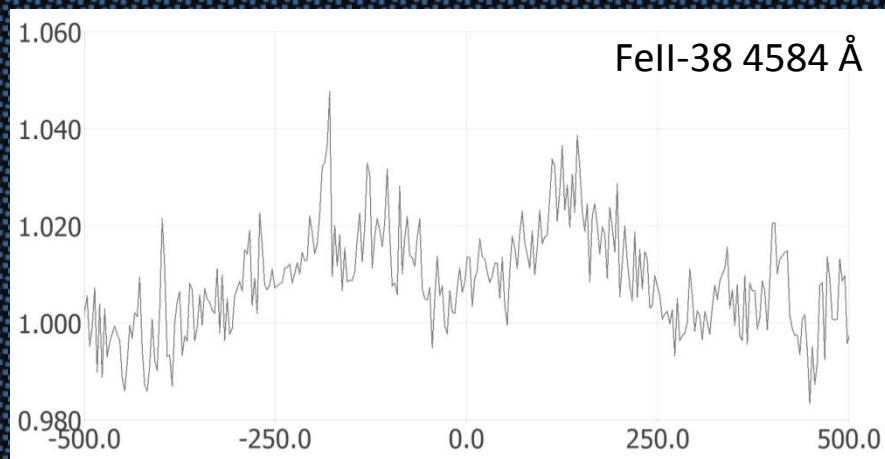
## **САО РАН БТА, 6-м, 2002-2010**

НЭС (Несмитовский эшелле-спектрограф) ( $R = 60000-75000$ )

**СФНТ** (Canada-France-Hawaii Telescope), 3.6m, (2005 – 2009)

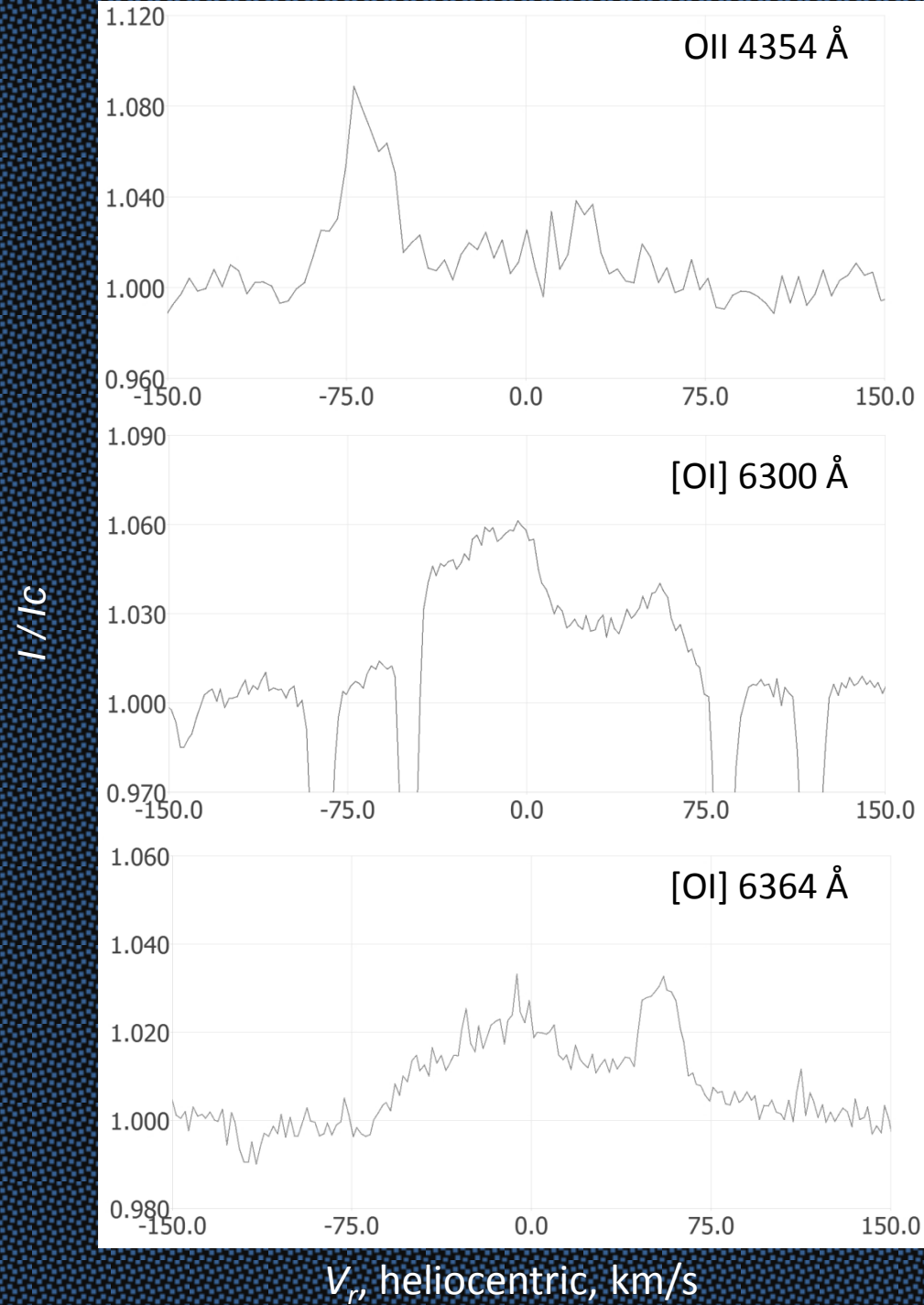
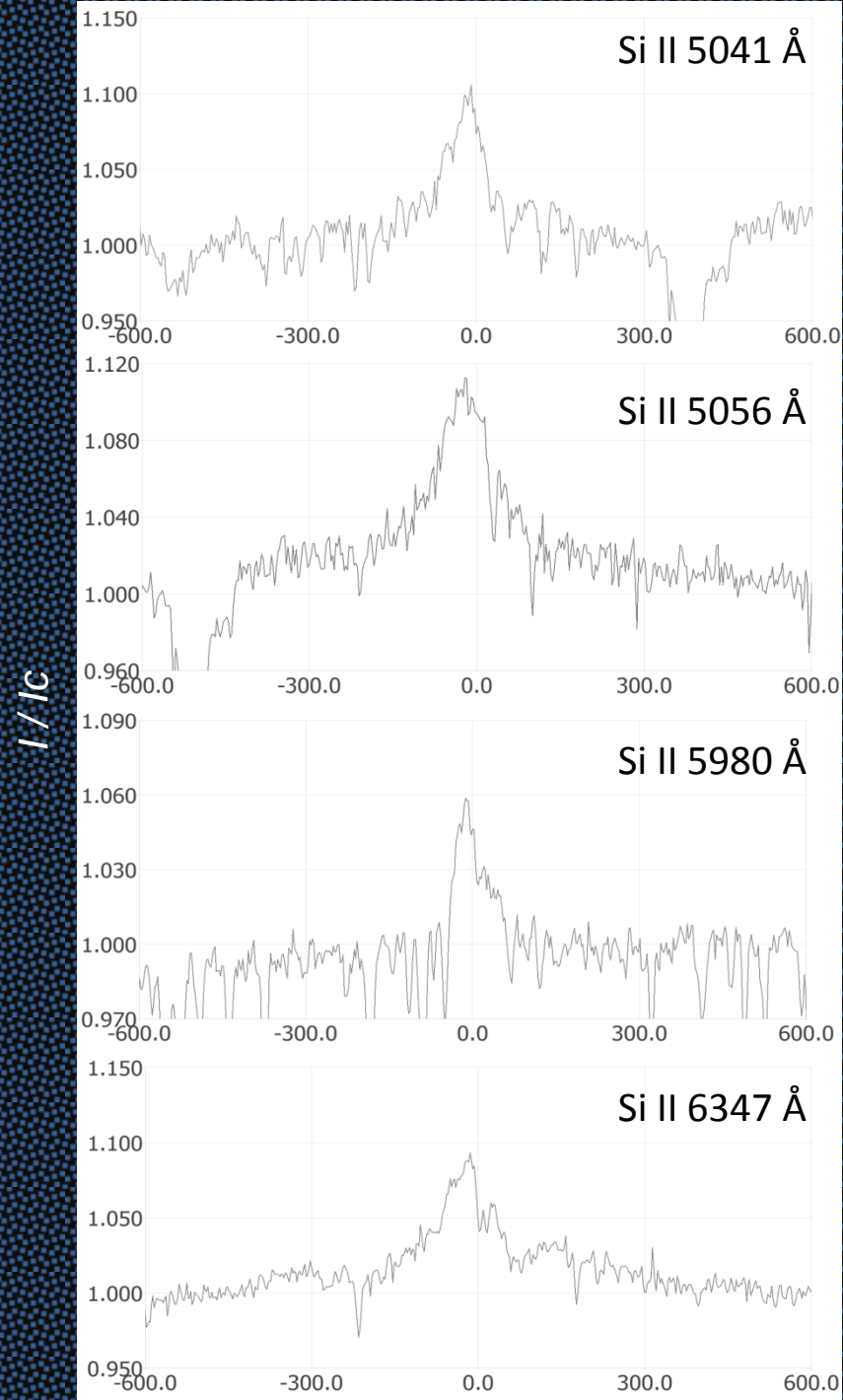
ESPaDOnS

$\Delta V_r > 70 \text{ km/s}$   
 $I / I_c \geq 1,015$



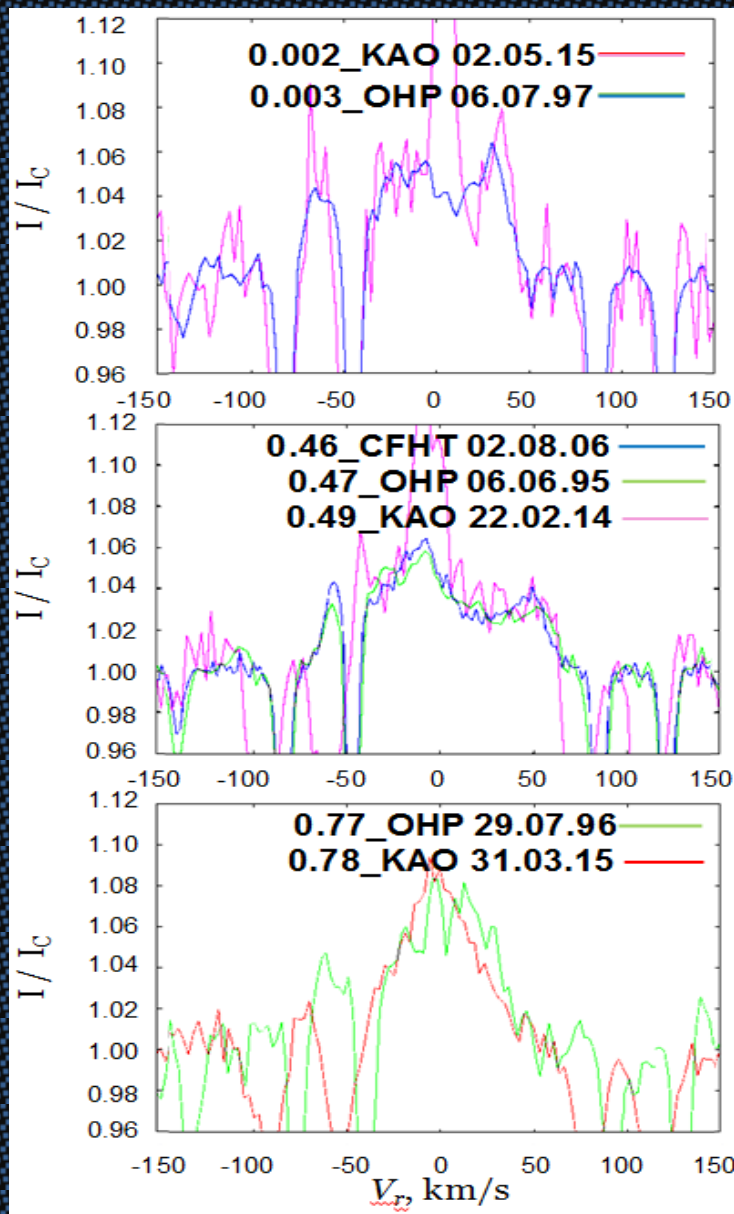
$V_r$ , heliocentric, km/s



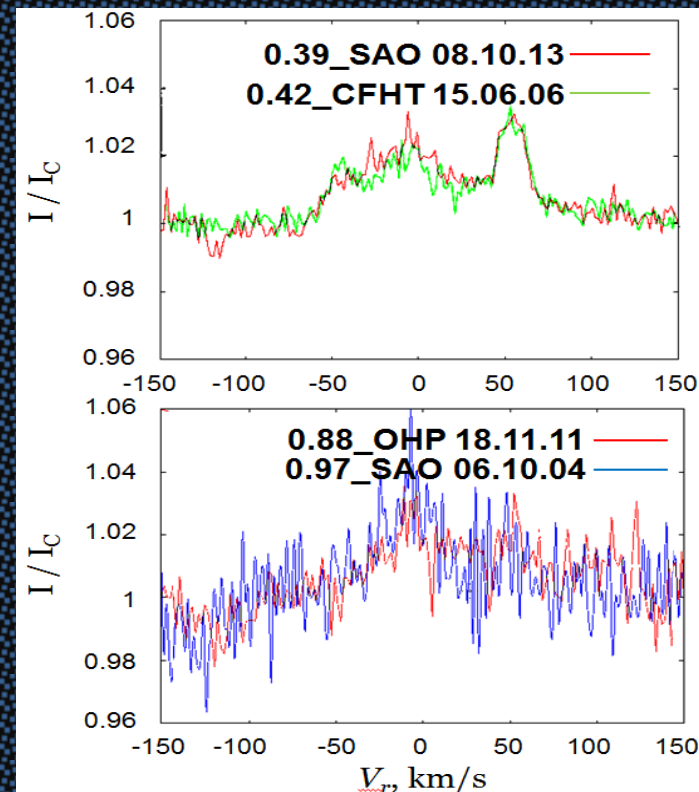


# Переменность линий кислорода

[OI] 6300 Å



[OI] 6364 Å



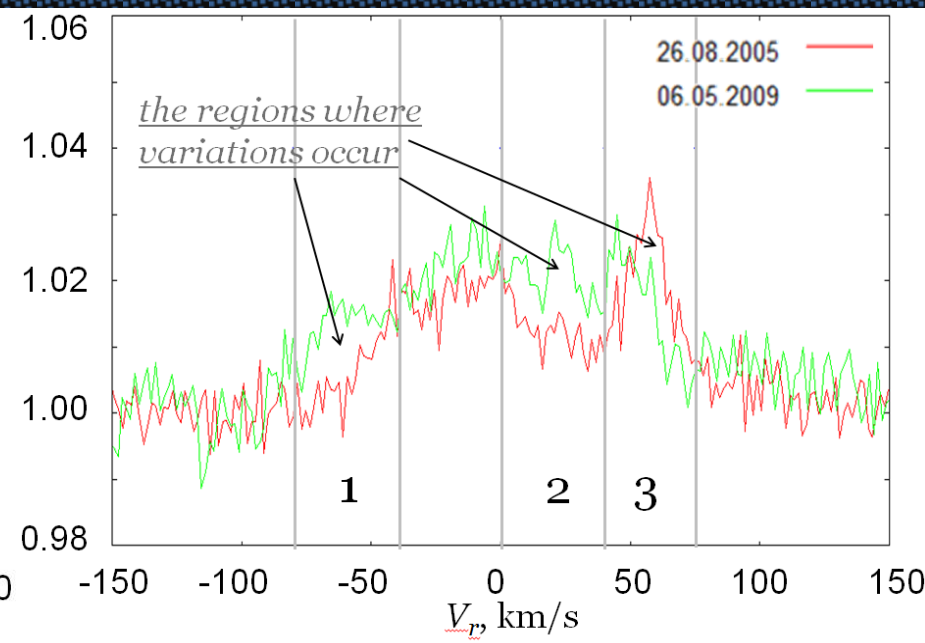
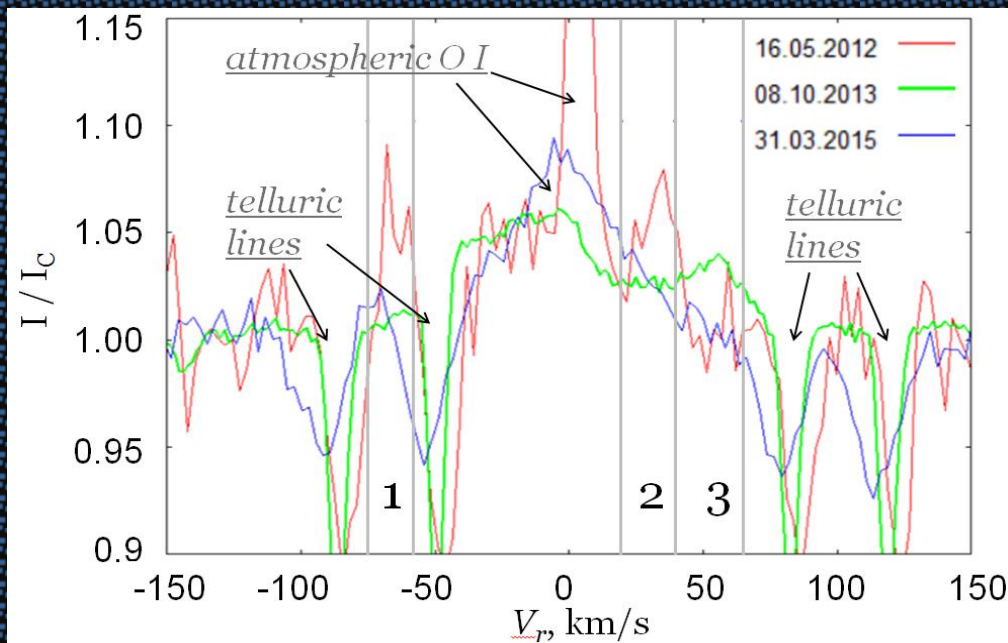
Переменность связана с орбитальной фазой

# $[OI] 6300 \text{ \AA}$

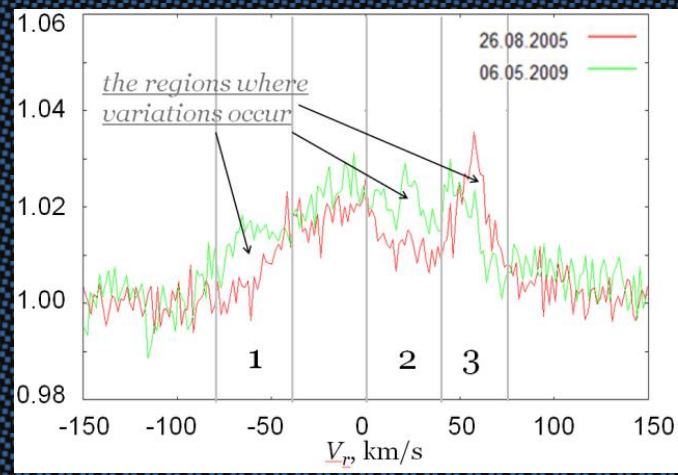
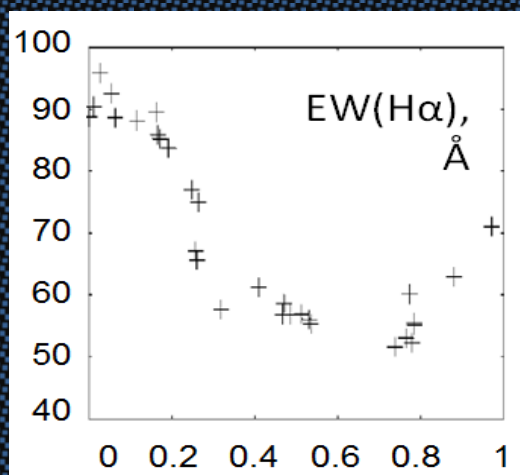
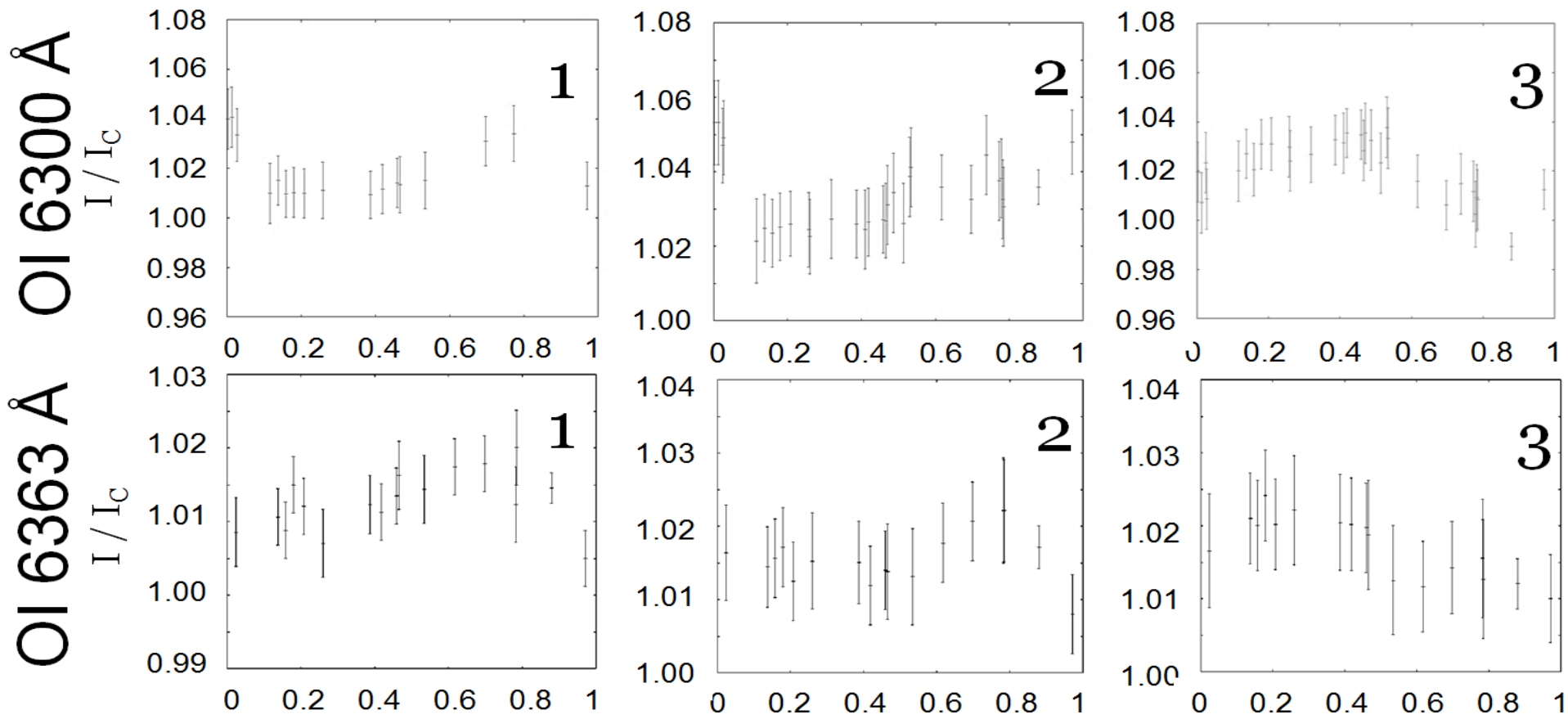
1.  $-70 - -55 \text{ km/c}$
2.  $20-40 \text{ km/c}$
3.  $40-60 \text{ km/c}$

# $[OI] 6364 \text{ \AA}$

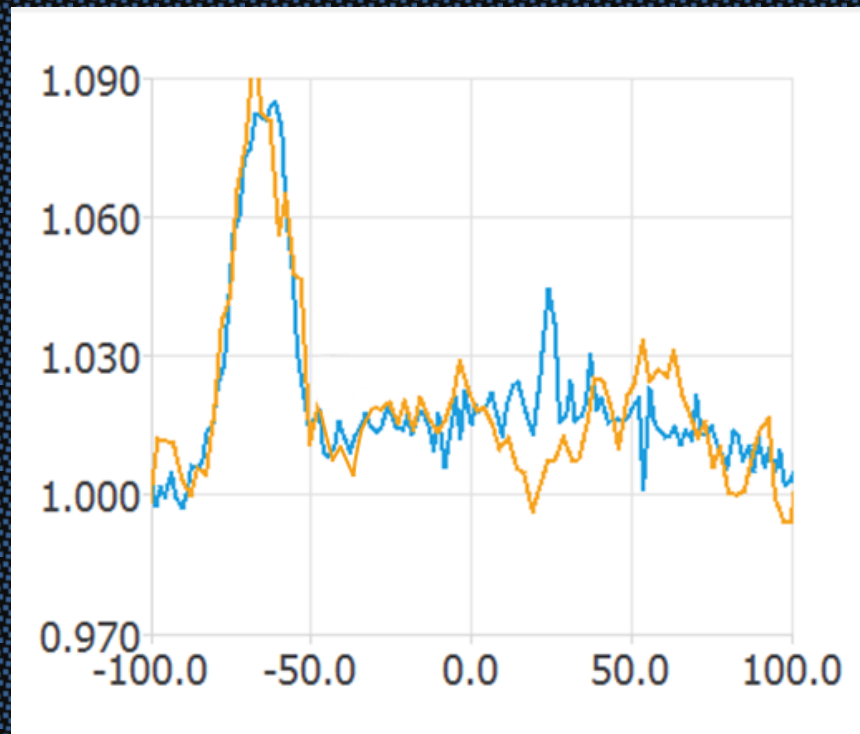
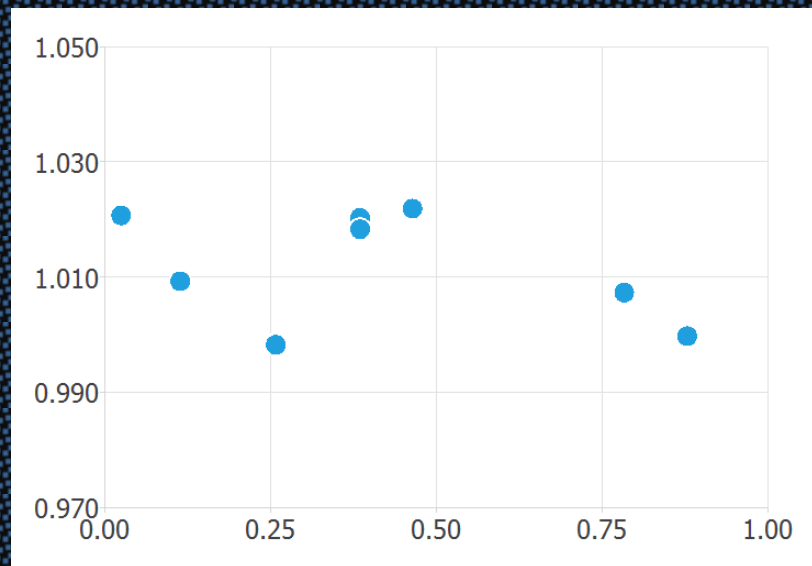
1.  $-80 - -40 \text{ km/c}$
2.  $20-40 \text{ km/c}$
3.  $40-70 \text{ km/c}$





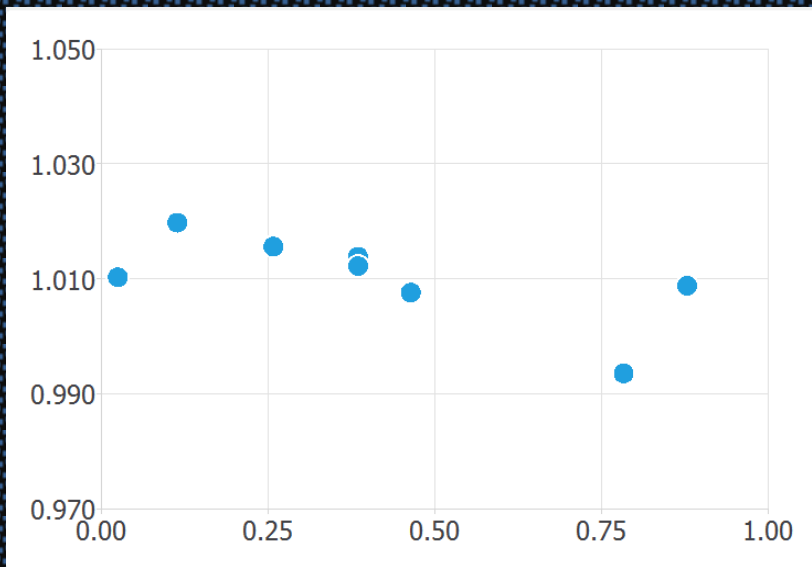


OII 4354 Å



$V_r$ , heliocentric, km/s

OII 4354 Å



$V_r$ , heliocentric, km/s

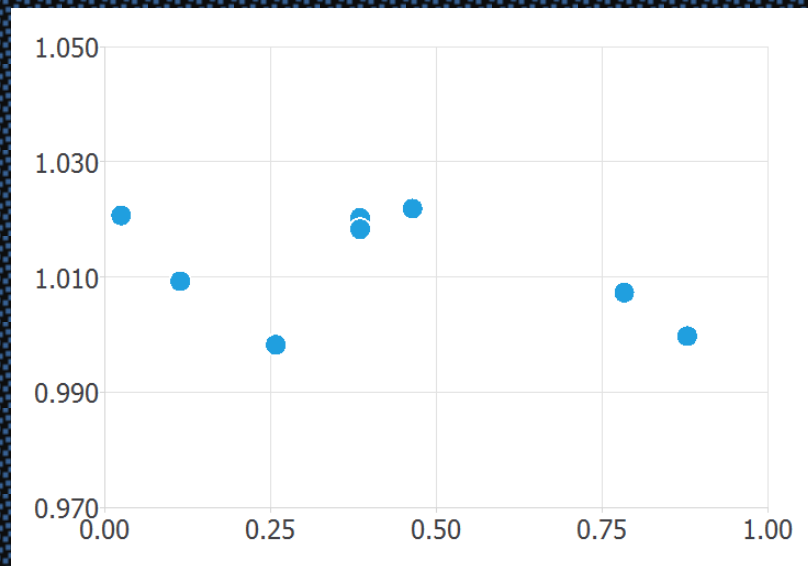
2.

20-40 km/c

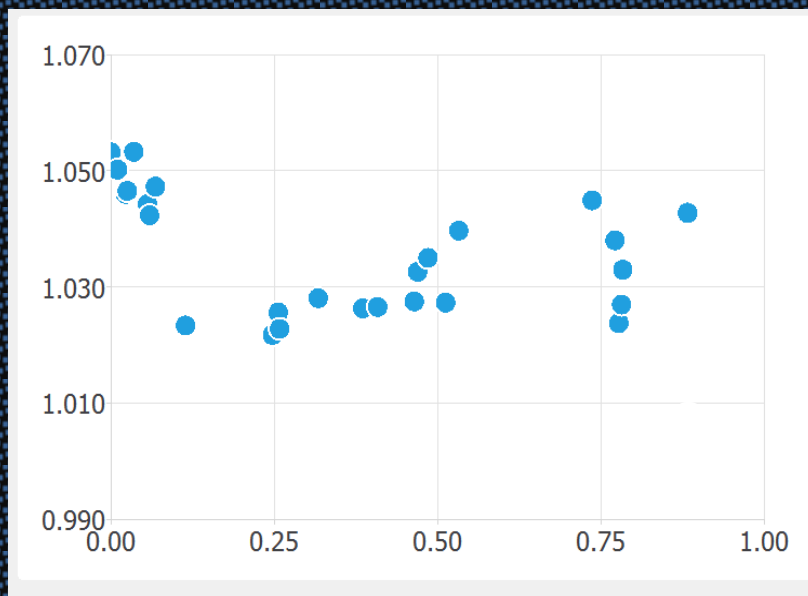
3.

40-70 km/c

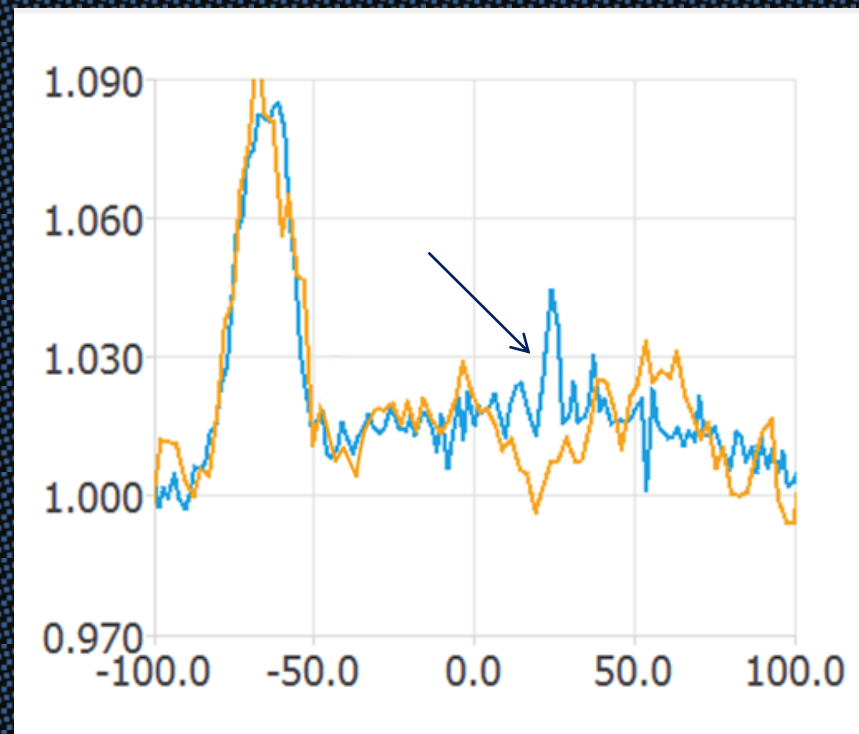
OII 4354 Å



[OI] 6364 Å



$V_r$ , heliocentric, km/s

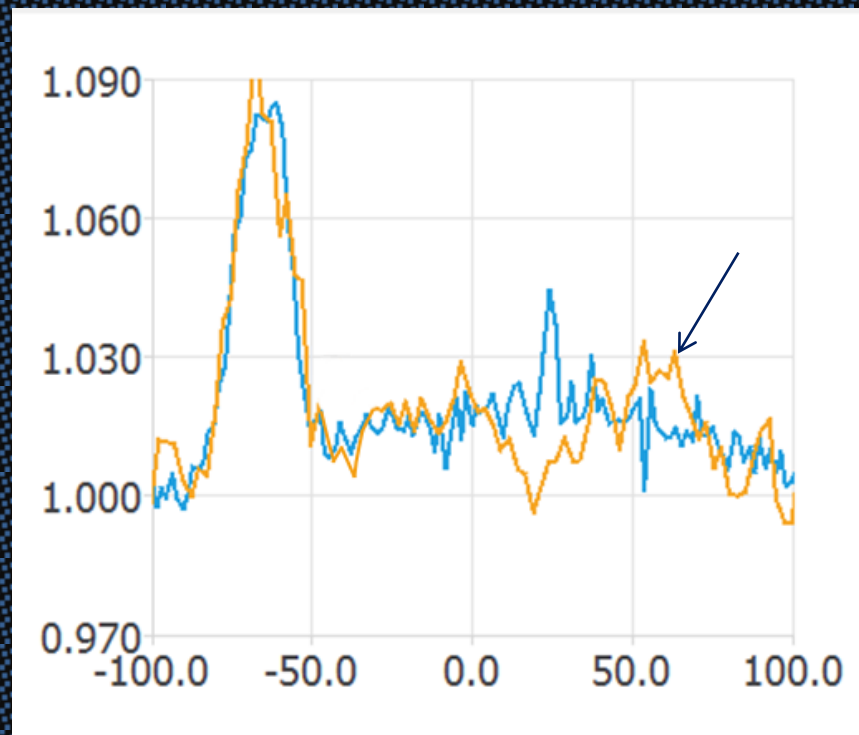
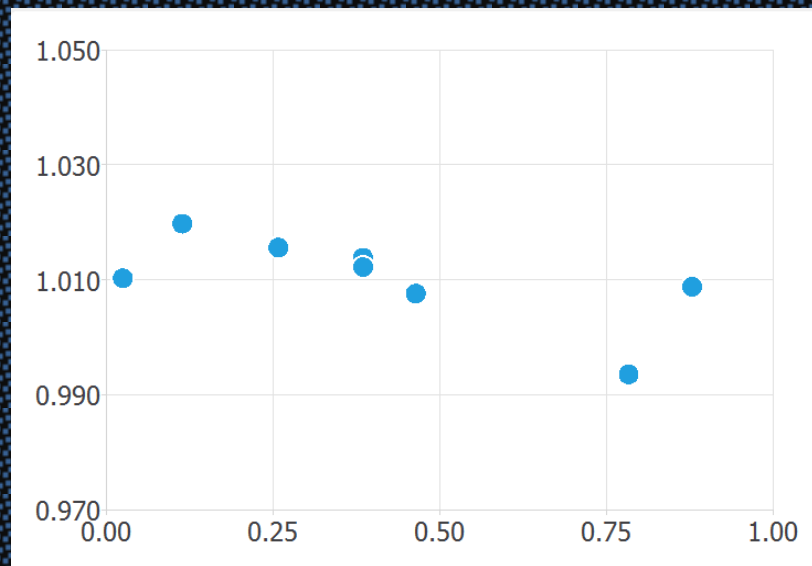


$V_r$ , heliocentric, km/s

2.

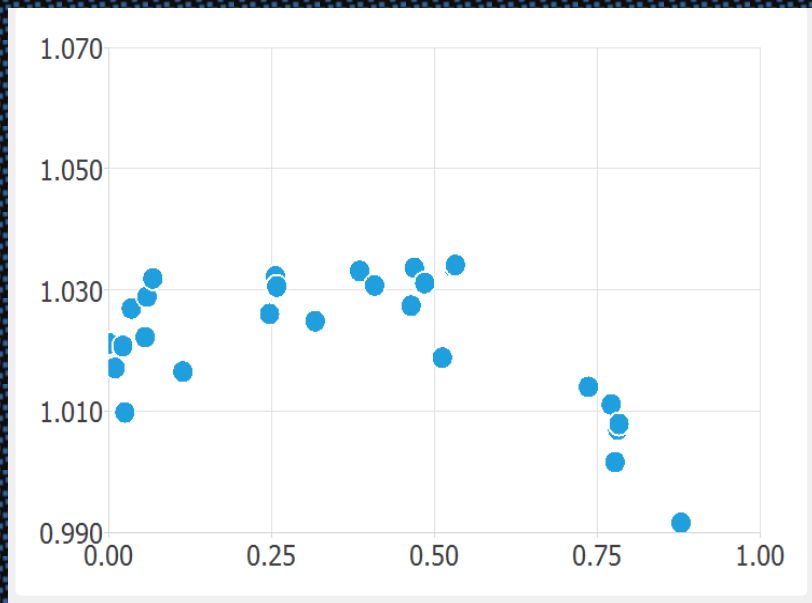
20-40 km/c

OII 4354 Å



$V_r$ , heliocentric, km/s

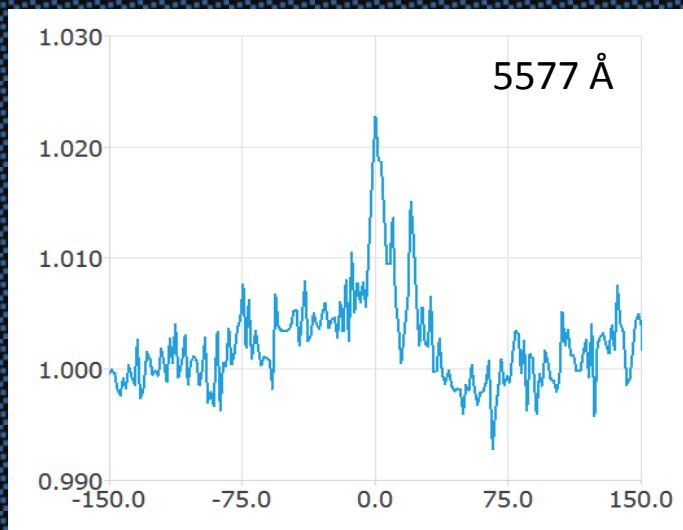
[OI] 6364 Å



$V_r$ , heliocentric, km/s

3.

40-70 km/c



$V_r$ , heliocentric, km/s

$\langle [\text{OI } 5577 \text{ Å}] / [\text{OI } 6300 + 6363 \text{ Å}] \rangle$ :

Acke et al. 2005, A&A, 436, 209

$<0,05$

In HD200775:

0,1-0,06

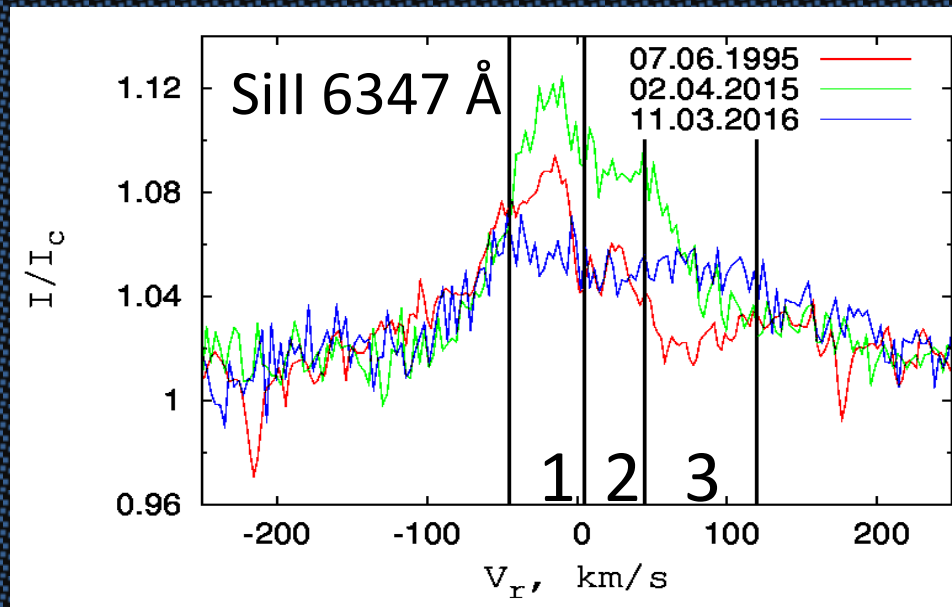
$\langle [\text{OI } 5577 \text{ Å}] / [\text{OI } 6300 + 6363 \text{ Å}] \rangle \approx 0,08$

При  $n=10^7 \text{ cm}^{-3} \rightarrow T=8000\text{K}$

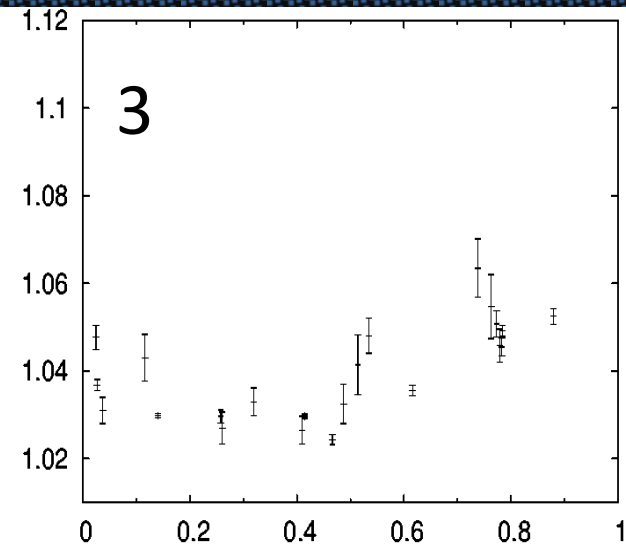
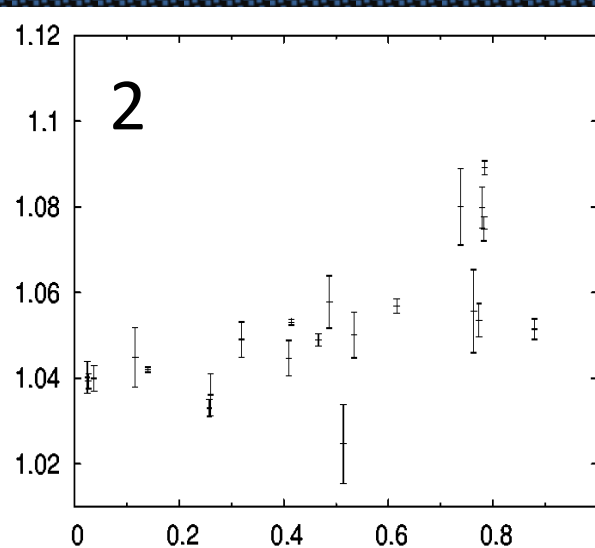
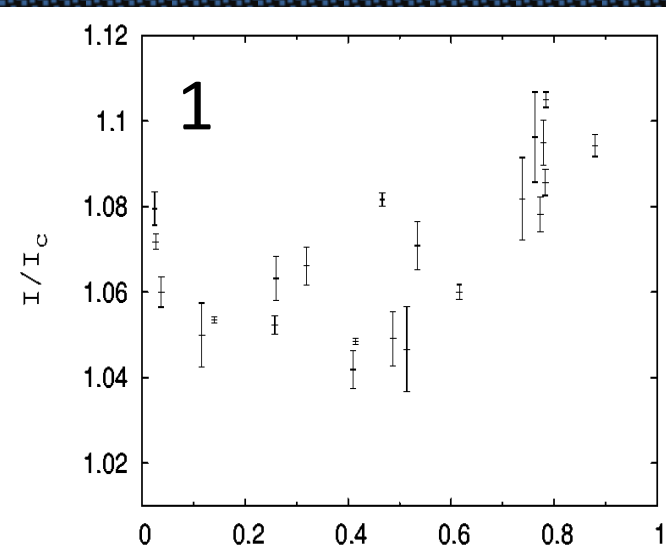
$n=10^8 \text{ cm}^{-3} \rightarrow T=6000\text{K}$



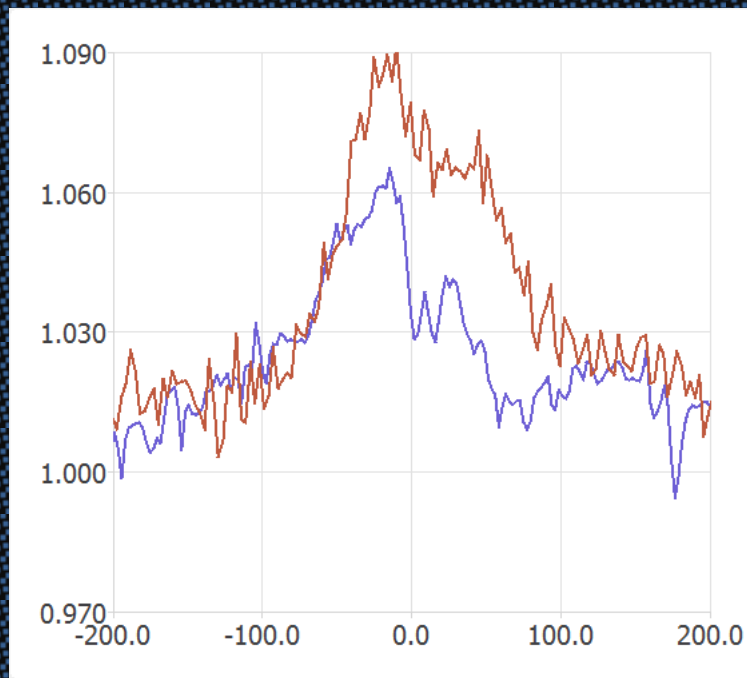
# Переменность линий SiII



1. -45 и 5 км/с
2. 5 и 45 км/с
3. 45 и 130 км/с



SiII 6347 Å

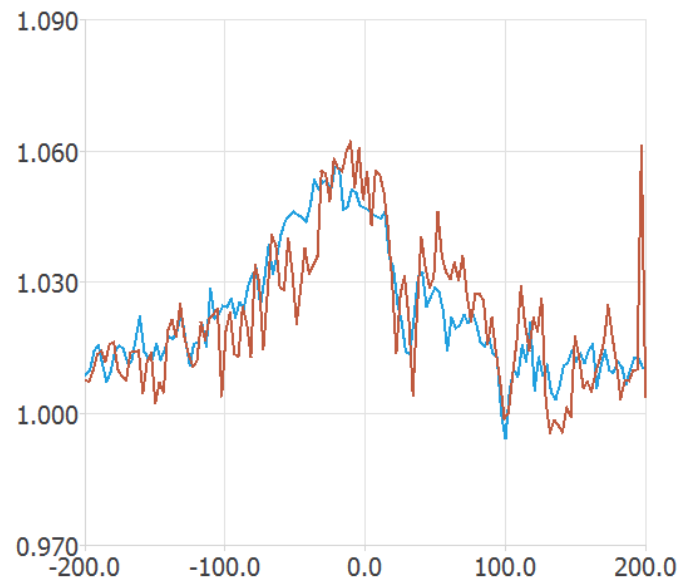


$V_r$ , heliocentric, km/s

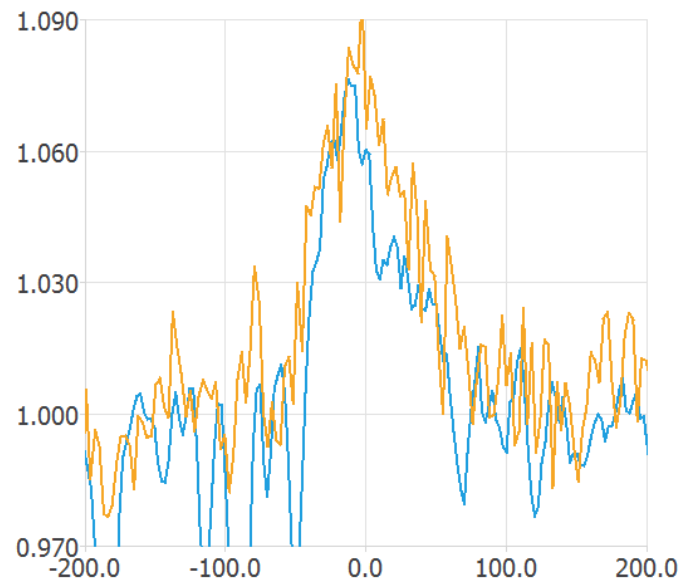
0,466

0,785

5056 Å

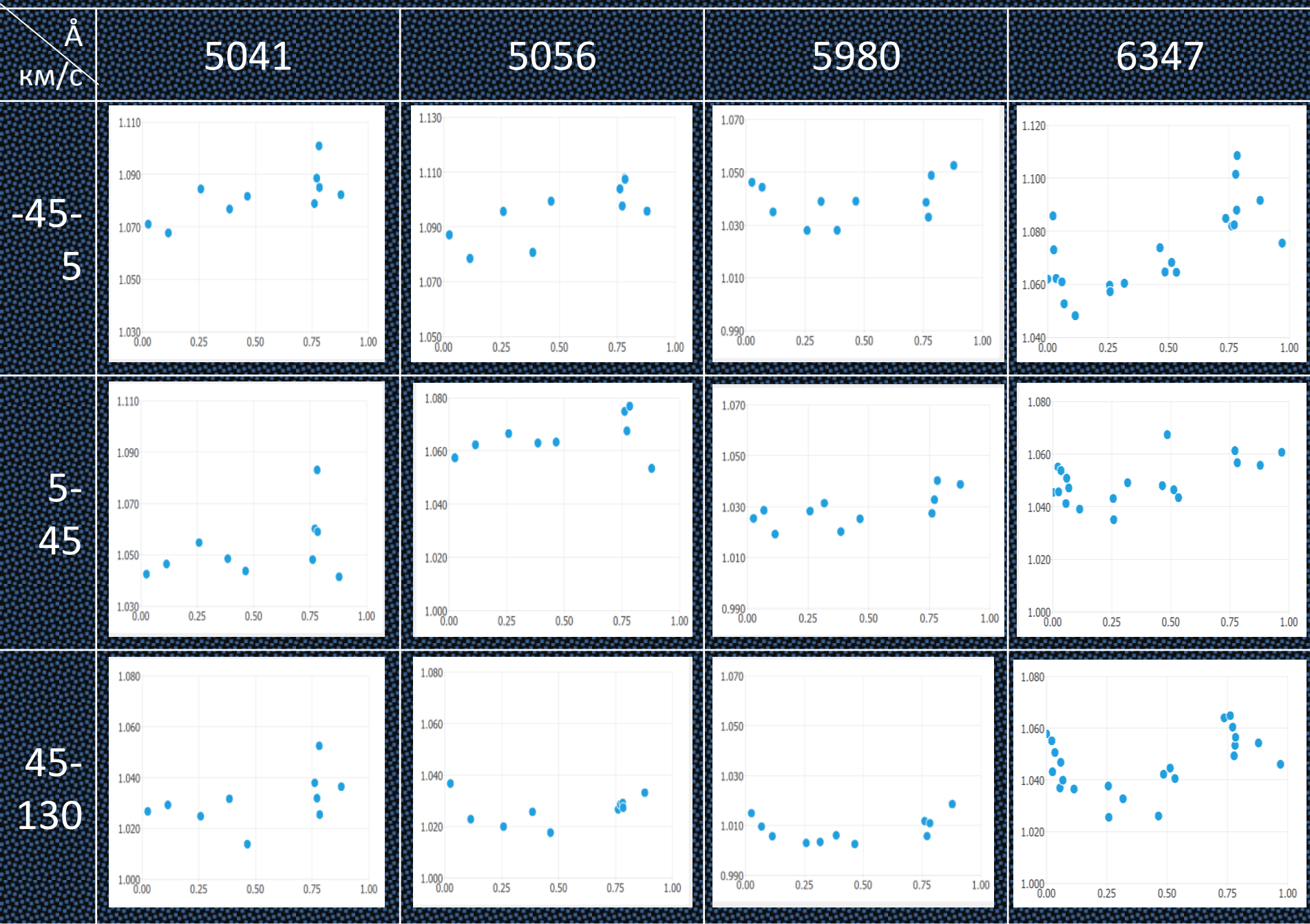


5980 Å



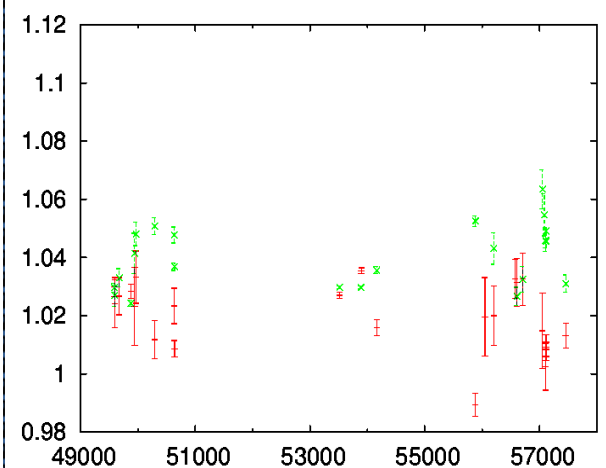
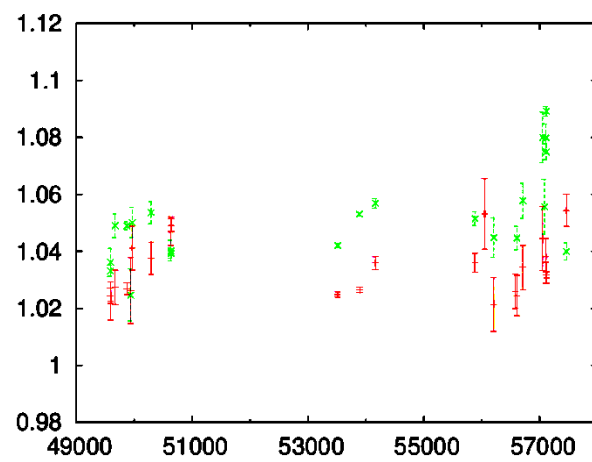
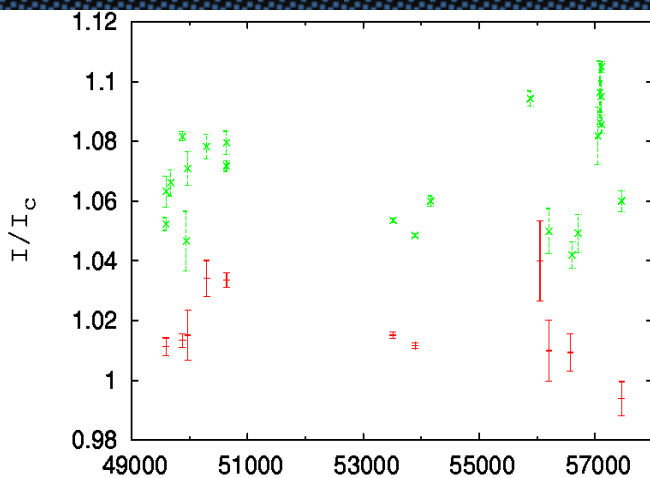
$V_r$ , heliocentric, km/s

Табл. 1 *Переменность компонентов линий Sill*



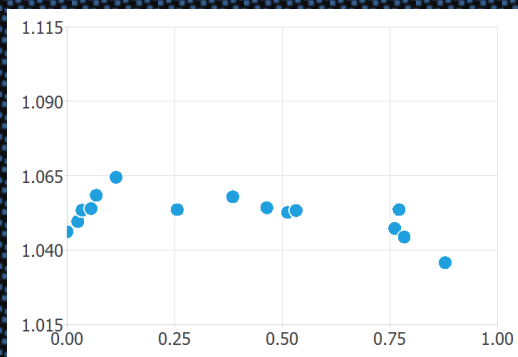
[O I] 6300 Å

Si II 6347 Å

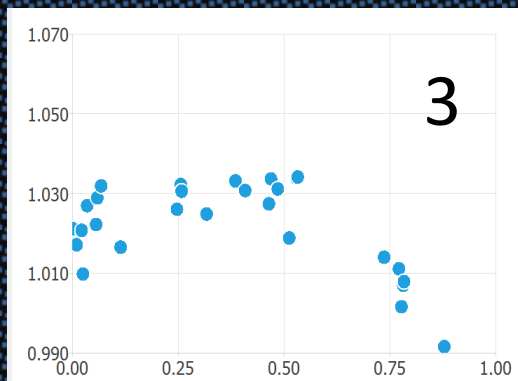
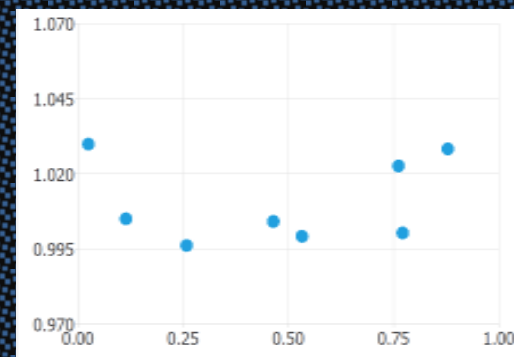


# Переменность линий FeII

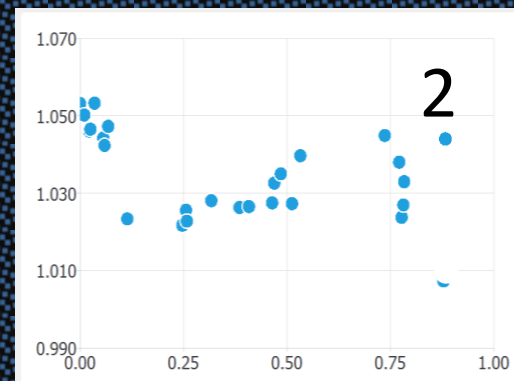
Тип А



Тип В



$[O I] 6300 \text{ \AA}$



$V_r$ , heliocentric, km/s

$V_r$ , heliocentric, km/s

Табл. 2 Компоненты линий FeII

| $\text{\AA}$ \diagup км/с | -250-<br>-170        | -130-<br>-30        | -30-<br>15  | 15-45 | 45-90         | 95-<br>130    | 130-<br>165 | 165-<br>200        |
|---------------------------|----------------------|---------------------|-------------|-------|---------------|---------------|-------------|--------------------|
| 4584                      | A<br>(-260-<br>-195) | A<br>(-125-<br>-75) | A           | C     |               | A             | A           | A<br>(155-<br>200) |
| 5018                      | -                    | -                   | B<br>(0-45) |       | B             | C             |             | A<br>(155-<br>200) |
| 5169                      | A                    | A                   | C           | B     | B             | A<br>(95-210) |             |                    |
| 5184                      |                      |                     |             |       |               |               |             | A<br>(155-<br>210) |
| 5317                      | B                    | A                   | C<br>(5-30) |       | C<br>(30-130) |               |             | A<br>(155-<br>200) |

Спасибо за внимание!