



# ExoClock Newsletter

Dear ExoClock participants,

Hope you are all doing well!

*We would like to welcome the new members!*

*We send out a newsletter like this at the beginning of every month, while you can read the past newsletters, watch the past meetings, and have access to other educational material at:*

[www.exoclock.space/users/material](http://www.exoclock.space/users/material)

*We also organise meetings dedicated to new ExoClock members. These meetings are held just after our regular monthly meeting. The beginner's meeting will no longer be fixed on the Friday after our regular meeting, because we would like to facilitate participants with different schedules. In these meetings, newcomers have the opportunity to ask questions of any level related to the operation of the website, observations of transits, data analysis etc. Note that these meetings are not recorded.*

*Finally, we have a Slack channel for more direct communication and if you want to join, please send a request at [exoclockproject@gmail.com](mailto:exoclockproject@gmail.com).*

**In this newsletter, we discuss:**

## **1. Announcements**

### **1.1. Next ExoClock paper update**

### **1.2. EPSC 2022**

### **1.3. CMOS group update & offer**

### **1.4. Synchronous Observations campaign**

## **2. Highlighted observations**

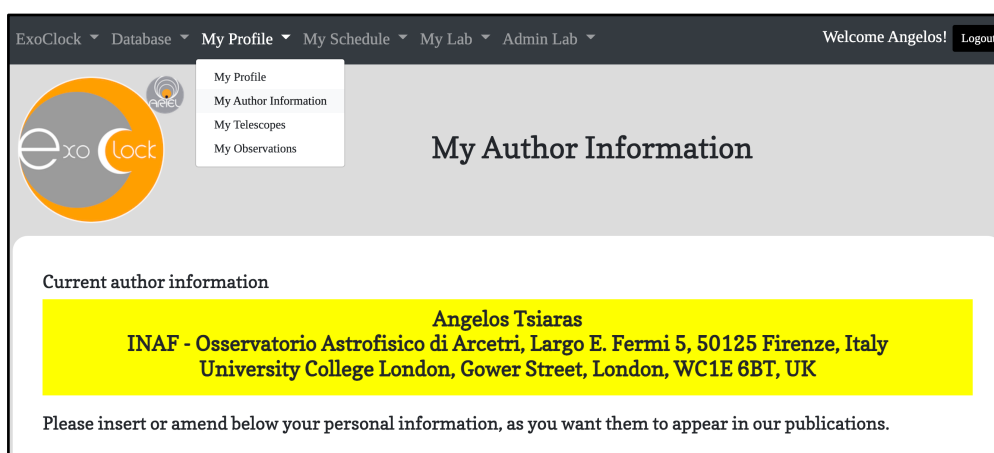
## **3. ALERTS**

## 1. Announcements

### 1.1 Next ExoClock paper

We would like to remind all participants to fill in the information requested in the “My Author Information” page under the “My Profile” tab, as we need this information for the upcoming paper. The participants that will be co-authors in this year’s paper (those of you who have uploaded observations before the end of 2021) will be notified during Aril.

For teams of more than one observer we are following the 1-1 rule, meaning that the number of observers that can be co-authors is equal to the total number of observations submitted by the team. If you have co-observers that you believe should be included in the author list for this year’s paper, please contact us and also let your co-observers know that they will need to create an account and fill their author information, too.



### 1.2 EPSC 2022 open for abstracts

The EPSC 2022 (European Planetary Science Congress) is the largest Planetary Science Conference that takes place in Europe every year. This year the congress will take place in Granada, Spain. There are several sessions dedicated to exoplanets and to pro-am collaborative efforts. We plan to present ExoClock and we are involved as conveners in some sessions.

The link for the conference and to submit an abstract is:

<https://meetingorganizer.copernicus.org/epsc2022/sessionprogramme>

The deadline for abstract submission is the **18<sup>th</sup> of May**.

### 1.3 CMOS group update & QHY offer

Roland Casali on behalf of the CMOS group has kindly arranged an offer for ExoClock members interested in purchasing a QHY camera. All the details can be found here:

[https://www.exoclock.space/cmos\\_testing\\_campaign](https://www.exoclock.space/cmos_testing_campaign)

Moreover, if you have already used QHY cameras for capturing exoplanet transits please send these results to Roland at this email: [mrcas62@gmail.com](mailto:mrcas62@gmail.com)

## 1.4 Synchronous observations campaigns

Recently, we decided to open-up the efforts of the synchronous observations working group to the entire ExoClock community. Thank you for joining this work, we hope to continue this research and see what results we can get.

First target: TOI-1298b results equivalent to 44-inch telescope!

The first synchronous observations campaign was for **TOI-1298b** in March.

<https://www.exoclock.space/database/planets/TOI-1298b>

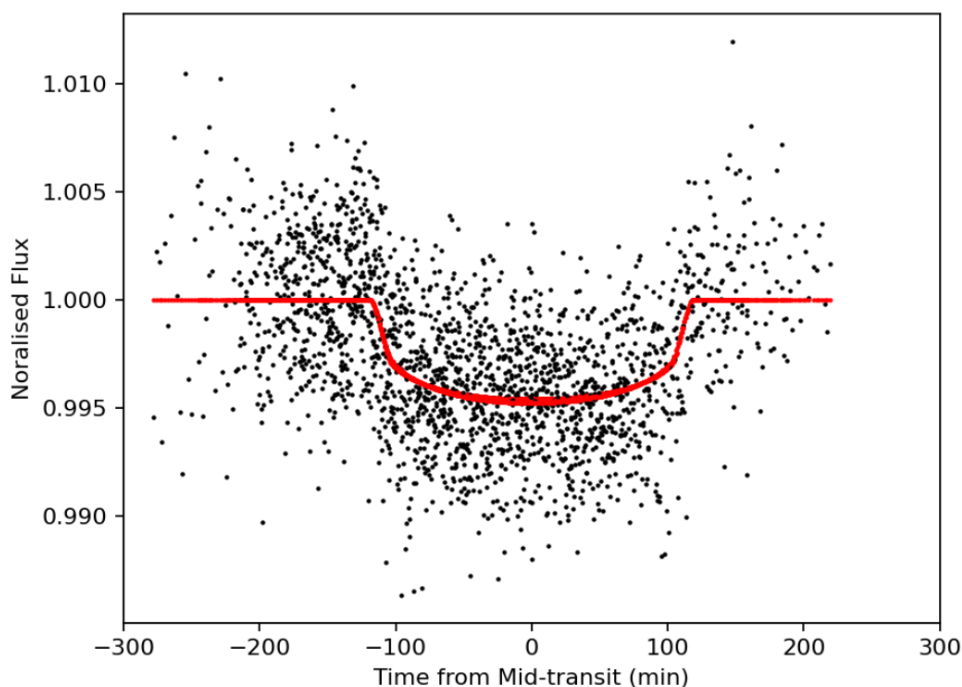
Three observations were conducted on the 7<sup>th</sup> of March and ten more on the 26<sup>th</sup> of March. The telescopes that participated had ranges from 8 to 12 inches, using Rc, L or no filter, and the total observing time was **56 hours**.

The total signal contributed by all the telescopes was equivalent to a single observation of **6 hours by a 44-inch telescope**.

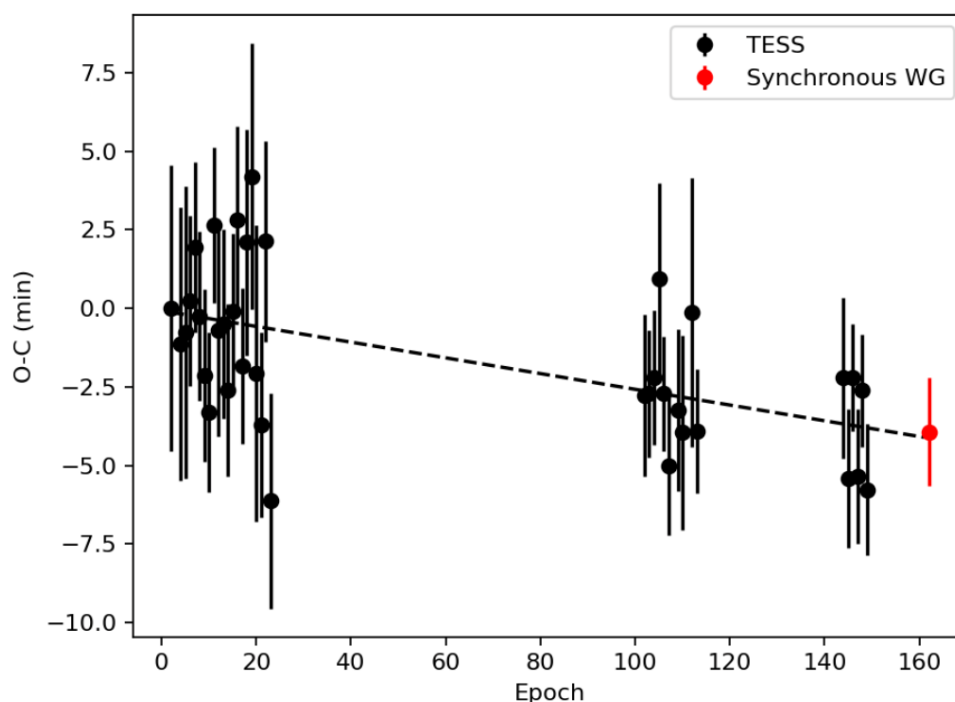
While the individual observations were not good enough to produce a reliable result (any of them were partial), the **signal-to-noise ratio** achieved by combining all the observations was exceptional with a value of **15.32**. This is very close to the expected **signal-to-noise ratio of 16.42**, meaning that the efficiency of the synchronous observations reached the **level of 93%**.

We would like to thank the synchronous observations working group and especially **Alessandro Nastasi** for organising this effort, and the observers who took part in it, namely: **Martin Crow (2 observations)**, **Simon Dawes**, **Kevin Johnson**, **Adrian Jones (2 observations)**, **Claudio Lopresti**, **Jean-Baptiste Marquette**, **Andy McGregor**, **Pete Mills**, **Thomas Mollier**, **Adam Popowic** and **Manfred Raetz**.

Combined light-curve and transit model:



O-C diagram in comparison with the observations from TESS:



The next synchronous observations campaign will be for **TOI-1789b**:

<https://www.exoclock.space/database/planets/TOI-1789b/>

The transit is happening on the **15th of April**! If you have a telescope **between 8 and 14 inches**, you can give it a try and observe the transit.

#### Observing details

The transit **will not appear in your scheduler**, so you will need to prepare the observations without the scheduler. The transit is expected to start at 20:28 UTC and end at 23:47 UTC. As the planet is a TESS discovery for which we do not have any further data, a drift in the ephemeris is possible so we would like to kindly ask you to observe a longer out-of-transit baseline, if possible. Therefore, we suggest starting your observation as soon as twilight ends and continue for as long as the star is above 20 degrees altitude. You can check the **ExoworldsSpies scheduler** to see if the transit is observable from your location (you should use a telescope aperture of 25 inches otherwise the planet will not appear).

<https://www.exoworldsspies.com/en/scheduler/>

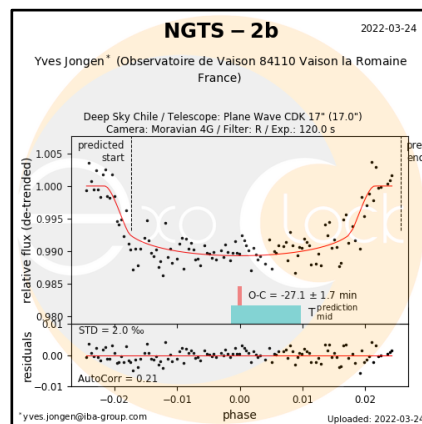
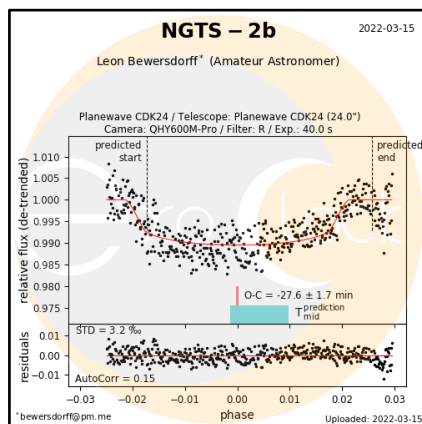
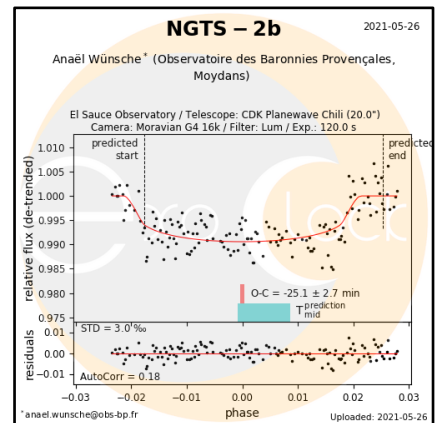
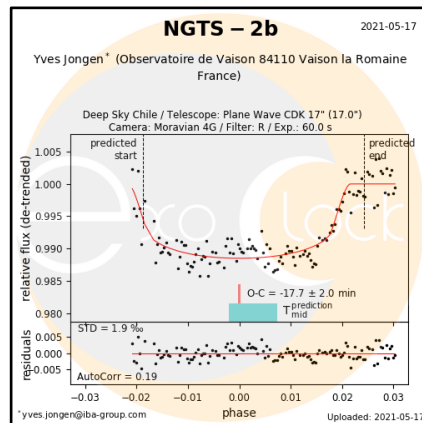
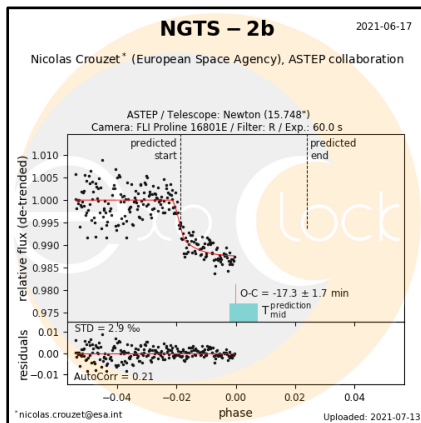
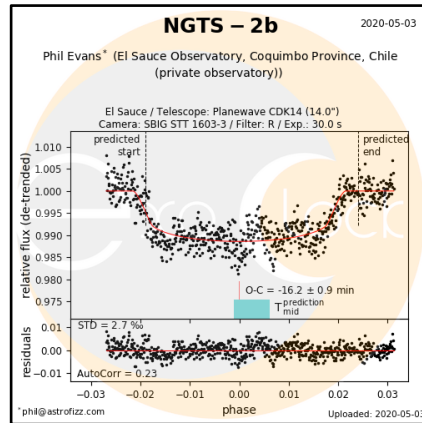
As the star is relative bright (**9<sup>th</sup> magnitude**) you need to be careful to not use very short exposure time. Remember that the exposure time should be longer than your overheads (dead time between exposures). To be able to have a decent exposure time you may need to use a filter -preferably Red Cousins- or to defocus your telescope.

Finally, as always, check that there is at least one good comparison star in the field of view. If there isn't one, you can try moving the target star towards the side of the field of view. Good luck!

## 2. Highlighted observations

March has been another very busy month, as you submitted over 200 observations. We would like to thank you all for your efforts!

We have selected NGTS-2b, for which a shift of  $\sim 15$  minutes was initially identified by Phil Evans during 2020. This drift was confirmed by more observations in spring/summer 2021 by Nicolas Crouzet, Anaël Wünsche and Yves Jongen, and finally, new observations in March by Leon Bewersdorff and Yves Jongen showed that the transit is still drifting away and has now reached a value for the O-C of  $-27$  minutes. Below you can see some of the light-curves.



**Congratulations to everyone for your efforts!**

### 3. ALERTS

Thank you all for observing the alert targets! Please check your personalised alert schedule at:

[www.exoclock.space/schedule/alerts](http://www.exoclock.space/schedule/alerts)

for the **ALERT** planets and if you get a clear sky and a long-enough night, you can try observing them!

The following targets are in the current **alert system**:

- WASP-38b
- NGTS-12b
- WASP-185b
- TOI-905b
- HATS-10b

Please remember that many targets were not in the alert list, before an unexpected shift was identified by you, the ExoClock participants. This highlights the importance of observing targets that are also of low and medium priorities.

Clear Skies,  
the ExoClock team