



ExoClock Newsletter

Dear ExoClock participants,

We hope you are all well. Although days in June are very long and observing is hard, especially for high latitudes, we still receive many observations through the website. Many thanks for staying active even during this month!

We are happy to inform you that the first ExoClock publication is close to being completed and will be submitted soon! In our next meeting, which will happen in July, we will share the results with you and we can further discuss them. We remind you also that this first publication includes observations submitted only before the 15th of April and therefore, any later observations will be included in our second publication.

In summary, more the 600 observations are included in this first work, related to 119 planets from the current list and obtained between 2011 and 2020. The ephemerides of 28 planets were updated while the ephemerides of additional 59 planets were verified. The remaining number of planets, had only one observation, and more are needed in order to either verify or update their ephemerides. These will be included in the second round.

Most of the planets that had their ephemerides updated were marked as high priority targets in ExoClock or as raised as alerts during the first 8 months of the project. This is thanks to your active response and your dedicated efforts, which proves that a collaborative relationship is vital to maximise the use of resources and increase precision in the results. Congratulations to everyone!

Slack Channel

In this newsletter, we invite you to join our brand-new Slack Channel which we hope to make our communications easier and also allow the direct communication between the participants. The Slack Channel could be useful in order to avoid repeating the same questions and it is also important to encourage some conversations between community members for common issues. You can also contact us through the Slack Channel, to decrease the traffic in our e-mail accounts.

We have been discussing recently the potential of creating a place for discussing issues related to exoplanet observations. At the moment, following your suggestions, we created a Slack Channel for this purpose. At a next phase we will monitor the reported issues and create an FAQ section on the website, with the aim of gradually moving to a fully functional forum on the website.

The Slack Channel we have created at the moment the following sections:

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| <ul style="list-style-type: none"> 0. Website <ul style="list-style-type: none"> 0.1. Scheduler 0.2. Upload 0.3. Mid-times 1. Observing <ul style="list-style-type: none"> 1.1. Planning 1.2. FOV 1.3. Settings 1.4. Software | <ul style="list-style-type: none"> 2. Analysis <ul style="list-style-type: none"> 2.1. Reduction 2.2. Alignment 2.3. Photometry 2.4. Fitting 2.5. Software 3. HOPS <ul style="list-style-type: none"> 3.1. Issues 3.2. Suggestions |
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In addition, we have included a “**Live Support**” channel, where you can ask the community for help while observing! (if someone is around...).

If you are interested to join the Slack Channel, please inform us and we will send you an invitation ASAP.

Key points from the fourth web meeting

We would like to thank all of you for participating in the meetings, which are very productive and they are strengthening the ExoClock community spirit!

For those of you who did not have the chance to join, the recorded meetings together with all the newsletters are accessible through your account at:

<https://www.exoclock.space/users/material/>

Note that this material is only available to registered participants and thus, it is not allowed to use it for external purposes or share it with others.

During the fourth online meeting, these were the main topics discussed:

- *Synchronous observations*
We have noticed that recently, quite many observers are observing the same target at the same time using different equipment and sometimes from different locations. In some cases, this occurred randomly and in other cases, observers coordinated the observations from close areas (e.g. in Italy). The first results of such efforts are encouraging and we believe that larger scale synchronous observations can be arranged more regularly. Observations at the same time can reduce the uncertainty. In addition, they can be combined for more difficult targets and therefore, increase the capability of smaller telescopes. We would like to establish this effort since there is already a growing interest and arrange future coordinated observations. At the moment, if you would like to participate in such an effort, please send us a message to express your interest. This is only the starting point and we will keep discussing it in the next meetings. If you also have ideas for practically coordinating such efforts, we would like to hear from you.
- *Repeated observations of the same planet*
Some participants have been asking whether it is valuable to observe a planet many times if it has already been observed. This really depends on the amount of the existing

observations for a planet and on its priority. As a general guideline, re-observing frequently is the main goal in order to monitor the timings of the planets and at the, same time, to decrease the uncertainty of future predictions as much as possible. However, in the case of low priority targets, if there are many recent observations, there is no need for observing again for this season. Of course, during the next season new observations will be required to verify the ephemerides. Bear in mind also that the observable targets are changing all the time and new planets will be appearing in the future, apart from the already observed ones.

➤ *Multi-colour observations*

In general, transits observed using a red filter are more efficient and that is why we also recommend using this filter instead of others. While for the purpose of achieving precise timing, the red filter is better, other filters can be used to extract other information, such as the existence of an atmosphere around the planet. Therefore, observing a transit with multiple filters can be interesting but this effort would require analysing together many observations to achieve the appropriate signal-to-noise ratio. Since this is only a topic in its infancy, we will continue discussions and assess the potential of these observations. If you would like to participate also in such trials in the future, please send us an email to inform us.

Highlighted observations

During the last two months, quite many simultaneous observations have been carried out. We have already discussed the fact that such observations can be used to increase the precision of the results and also to monitor more difficult targets. For June the highlighted case was HAT-P-55b which went on and off the alert system in less than a month. An important shift in the planet's transit time was first discovered on May 19th by Adrian Jones and then the planet was followed up simultaneously by Mauro Calo, Matthias Mallonn, and Alberto Tomatis on June 6th. While one of the follow-up observations is still under analysis, a negative drift over 10 minutes in the ephemeris of HAT-P-55b can be confirmed. If, however, you don't any other planet of higher priority to observe these days, give it a try!

ALERTS

Thanks to everyone who observed some of the **Alert targets** during the last month. At the moment the most important alert is **KELT-18b**, which has shown a long shift and has only one more remaining observable transit for this season, which is happening during July.

Apart from KELT-18b, The following targets (including old and new ones) are also in the current **alert system**. Please check your personalised alert schedule at:

<https://www.exoclock.space/schedule/alerts>

and if you get a clear sky and a long night, observe them!

- HAT-P-6b
- K2-30b
- K2-237b
- KELT-15b
- WASP-13b
- WASP-26b
- WASP-83b

We remind you to send us at exoclockproject@gmail.com (or through the Slack Channel from now on!):

- Your feedback on the website
- Suggestions for new features
- Questions on the observations or the analysis
- Ideas for topics you would like to see in the newsletters

Stay well and healthy!

Clear Skies,
the ExoClock team

