



# Exoplanet Transits

Become a Planet Hunter

User Guide  
V2.0





UNISTELLAR

App version 2.0.1 (436)

# Planet Hunting Tutorial

First time observing a distant planet orbiting around its sun?  
Read this page to master your Unistellar telescope and join our team of Planet Hunters.

# PRE-OBSERVATION



1

Select your mission

The transit of an exoplanet is a unique event to record, and to observe one you need to be in a specific location on Earth. First, you need to select a mission near your location. Go to our [Exoplanet Transit Prediction Page](#) and select a transit you want to observe.

To find out if you can observe the exoplanet transit, simply zoom by scrolling on the map. If you are near any location with a symbol, you are qualified for the scientific mission! Each symbol has a meaning\*:



**Blue stars & shading** = you can observe the entire event.



**Yellow triangles** = you can observe the entire event but you may have tracking difficulty due to the altitude of the star.



**Orange diamonds** = you may miss the start or end of the event.

\*No symbol means you cannot observe the event.

# PRE-OBSERVATION



2

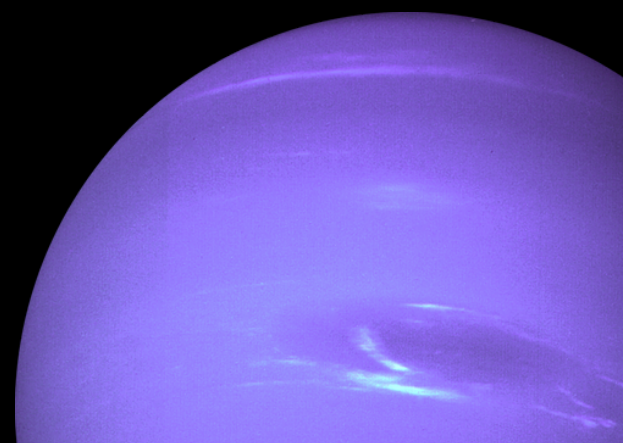
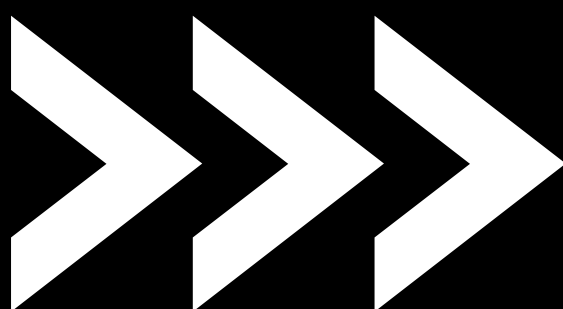
## Read the Prediction

Once you have selected a scientific mission based on your location, you need to access the observation details:

- the time of the event
- the coordinates of the star
- the recording parameters

All of these parameters are listed on our [Exoplanet Transit Prediction Page](#). You will need these to observe the transit.

On the next page is an example of a prediction map similar to what you will see if you go to the Exoplanet Prediction Page.





# PRE-OBSERVATION

## 2

## Read the Prediction



Based on the prediction example (above) :

- Local start date of the event : 22 July at 23h31
- Coordinate RA: 19h 27m 29s
- Coordinate Dec: +25° 27' 12"
- Recording parameters: 3970ms, 37 dB and 3790ms

All these parameters are also saved in a Deep Link that you can use 10 minutes before your observation. It is the first icon of the row, illustrated by a phone. (More information about [Deep Links](#) are given below in "During Observation".)





# PRE-OBSERVATION

## 2

## Read the Prediction



An image of the target's field of view is also available through the Finder icon. This will show you what you can expect to see through your eVscope if you are looking at the correct star. Please note that the exact orientation of the stars in the field of view will depend on your location and may be rotated relative to the image.

Additionally, you can click on a symbol to see observing details for that location.

# PRE-OBSERVATION



3

Get ready

## Prepare your gear:

The day before your scientific mission, you need to charge your Unistellar telescope and empty its memory. If you need help emptying the memory of your telescope, please read these guidelines on “[how to upload my data](#)”.

## Find your location:

To improve the quality of your data we recommend observing from a place with few street lights, not exposed to wind, and where you have good cellular service. You should also check the weather to avoid clouds and strong winds. The websites ClearOutside or Astrospheric are good tools for astronomers.



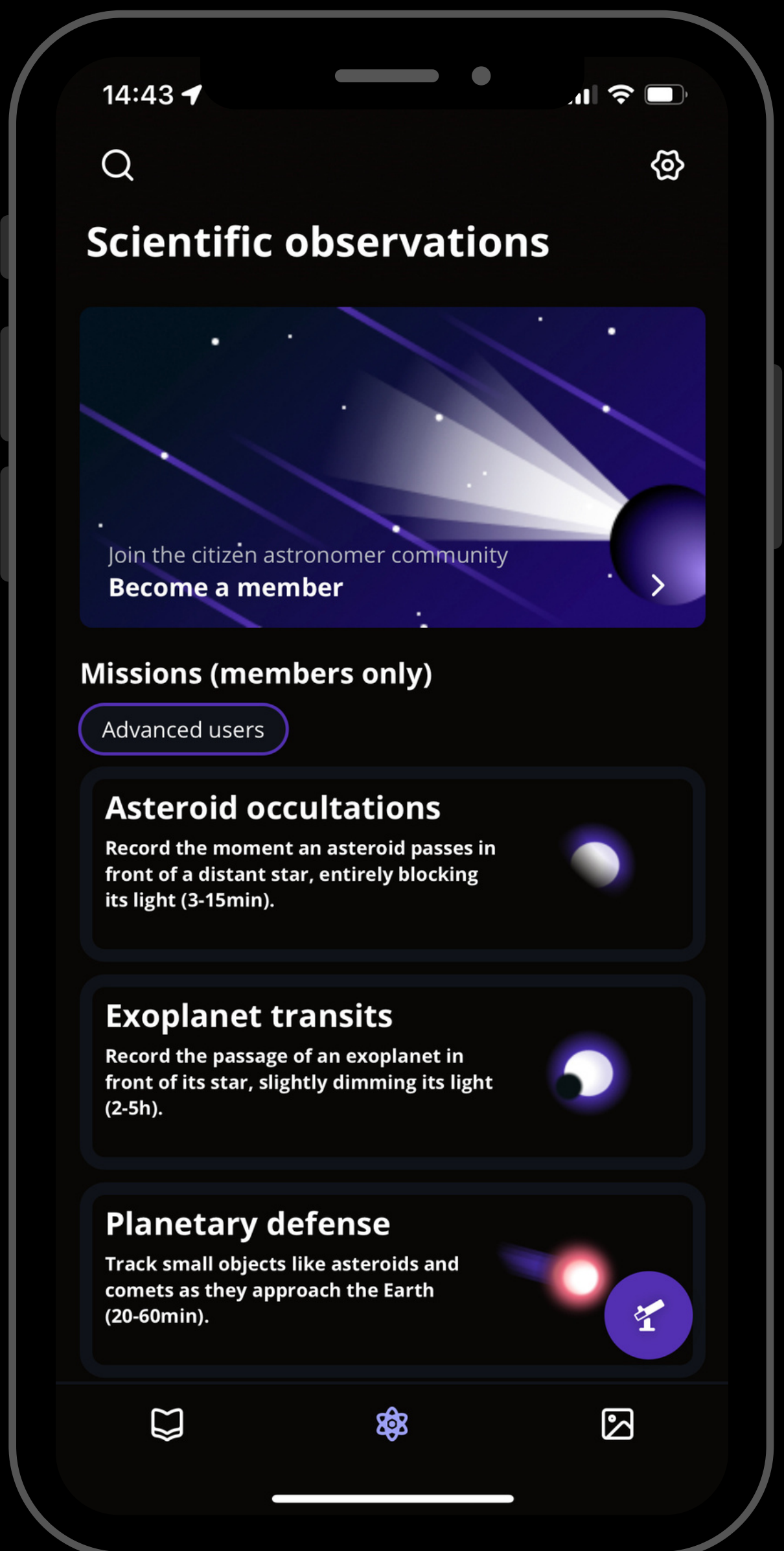
# PRE-OBSERVATION



4

Become a member

Join the community of Citizen Astronomers to receive alerts and be credited for your observation. To do so, in the Unistellar App V2.0, select the science menu and click on “[Become a member](#)”. You will also receive an email invitation to join our Slack communication platform where thousands of Unistellar Citizen Astronomers and professional astronomers are connected.





# DURING OBSERVATION



1

30 minutes before

Set up your Unistellar telescope as you normally would before observing.

- Level the tripod
- Launch the Unistellar App (make sure that your smartphone was connected to 3G/4G/5G before opening)
- Turn your telescope On
- Launch Autonomous Field Detection through the App
- Calibrate your telescope with the Collimation Screw and Focus Wheel. If you need help calibrating, please read these guidelines on ["how to collimate my mirror"](#) and ["how to use the bahtinov mask for focus"](#)



# DURING OBSERVATION



2

15 minutes before  
(optional)

To make sure you get the best scientific data possible, it is helpful to manually take an initial set of "Dark Frames." You will also take these at the end of your observation during the the Sensor Calibration step (see page 15).

1. Place the dust cap on your telescope. You do not need to GoTo first. You can take these dark frames with your telescope in any position, as long as you have done a Field Detection.
2. Open your Unistellar App, click on the Science menu and select the Exoplanets tab. When you are prompted to point to your Target, click on **Skip**. On the next screen, enter the *Exposure time*, *Cadence* and *Gain* that you will use for the observation, as listed in the prediction. In the *Record Duration* box, enter 2 minutes. Then click on **Save**.
3. Follow the prompts to continue. You can refer to the following slides for more details.
4. If you are prompted to "Calibrate your Sensor" after this 2-minute observation, click **Skip**.

Now you are prepared to observe the transit!



# DURING OBSERVATION



2

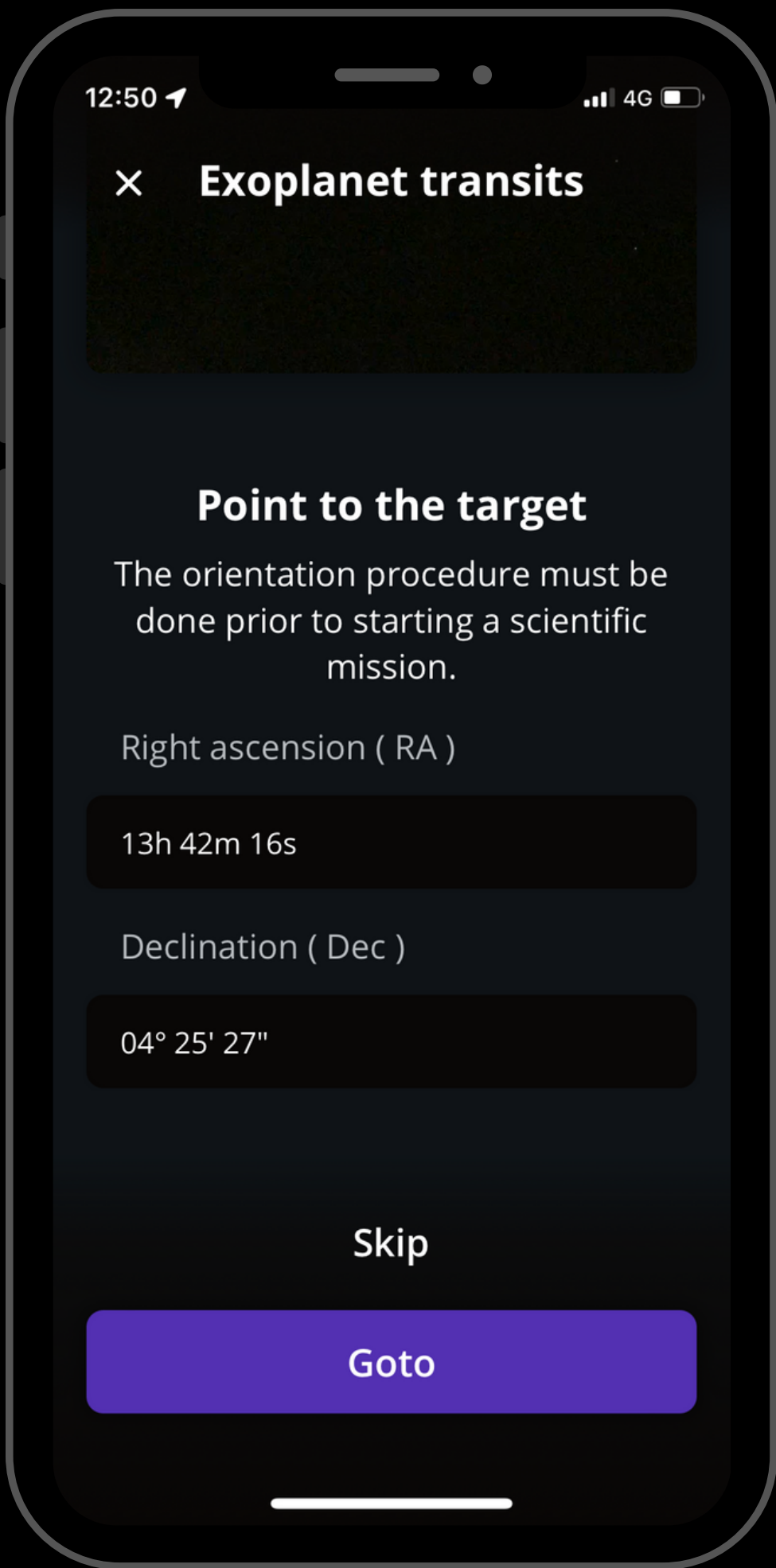
10 minutes before

It is time to point to your target! Two options:

1. **Deep Link method:** The quickest way to find your target is to use your smartphone to click on the Deep Link associated with your event. Refer back to page 5 to see where this is located. It will automatically open the Exoplanets tab of your Unistellar App and fill up the coordinates of the target and its recording parameters. If the *Right Ascension* box and *Declination* box are filled with the correct coordinates, click on **Goto** to point to your target. Once Goto is done, if the *Record duration*, *Exposure time*, *Cadence* and *Gain* are correct, click on **Save**.
2. **Manual method:** Open your Unistellar App, click on the Science menu and select the Exoplanets tab. Enter the *Right Ascension* and *Declination* and click on **Goto** to point to your target. Once Goto is done, enter the *Record duration*, *Exposure time*, *Cadence* and *Gain* and click on **Save**.

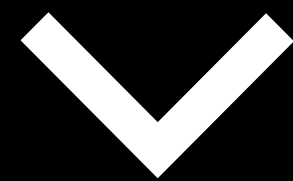






← Pointing to  
your target

Entering  
observation  
details



For the *Record duration*, you can enter the total duration to record the full event in one observation or you can enter a shorter duration of 1hr and record several short observations. The second scenario will improve the telescope's tracking of the target throughout the event.

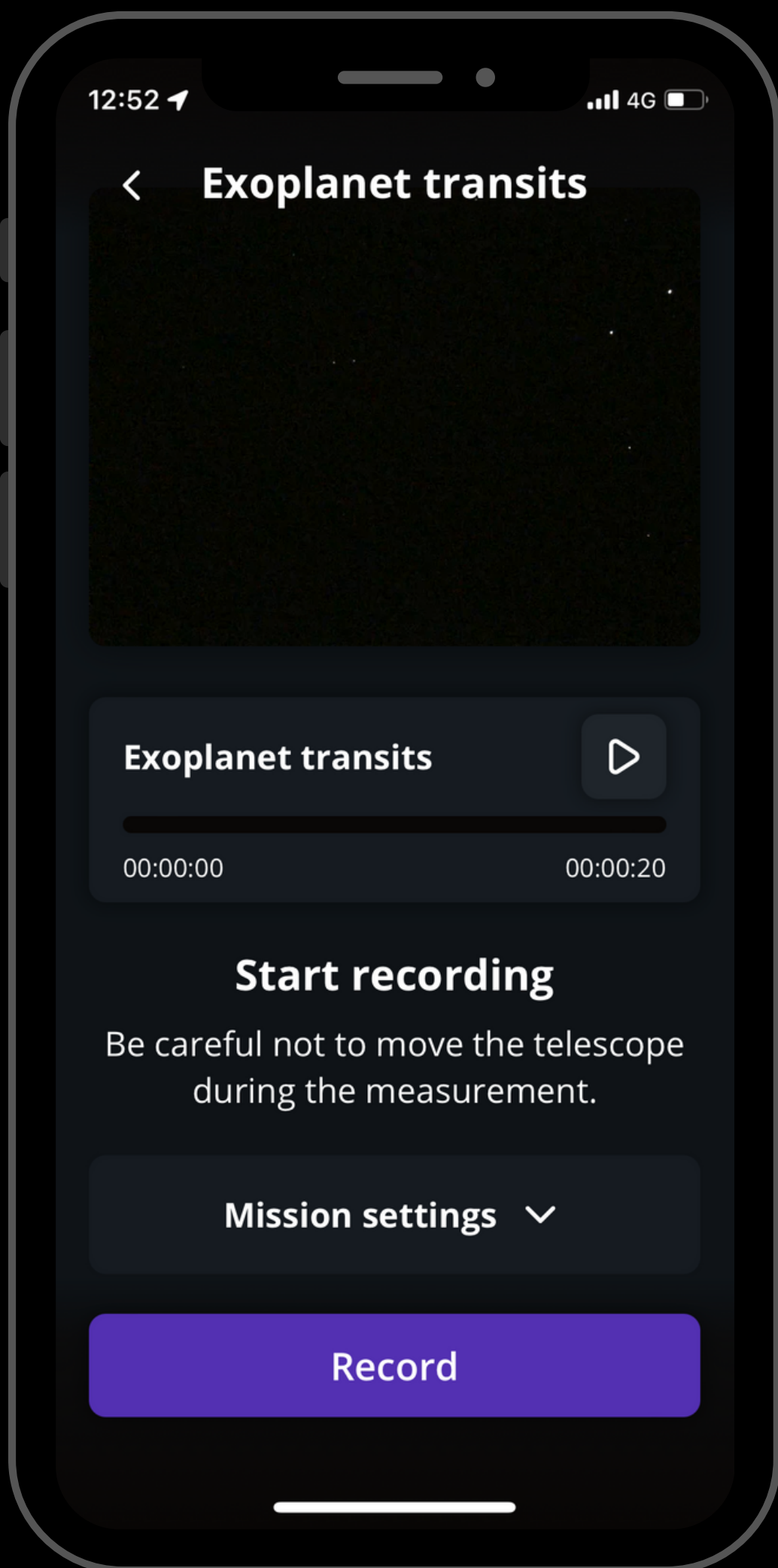


# DURING OBSERVATION



3

## Launch observation



At the start time, click on the **Record** button to start the observation.

Note that the "Local Time" listed on the [Exoplanet Transit Prediction Page](#) is the start time when you should press **Record**. If you begin to record at this time and observe until the local "End Time" you have the best chance to catch the transit.

# DURING OBSERVATION

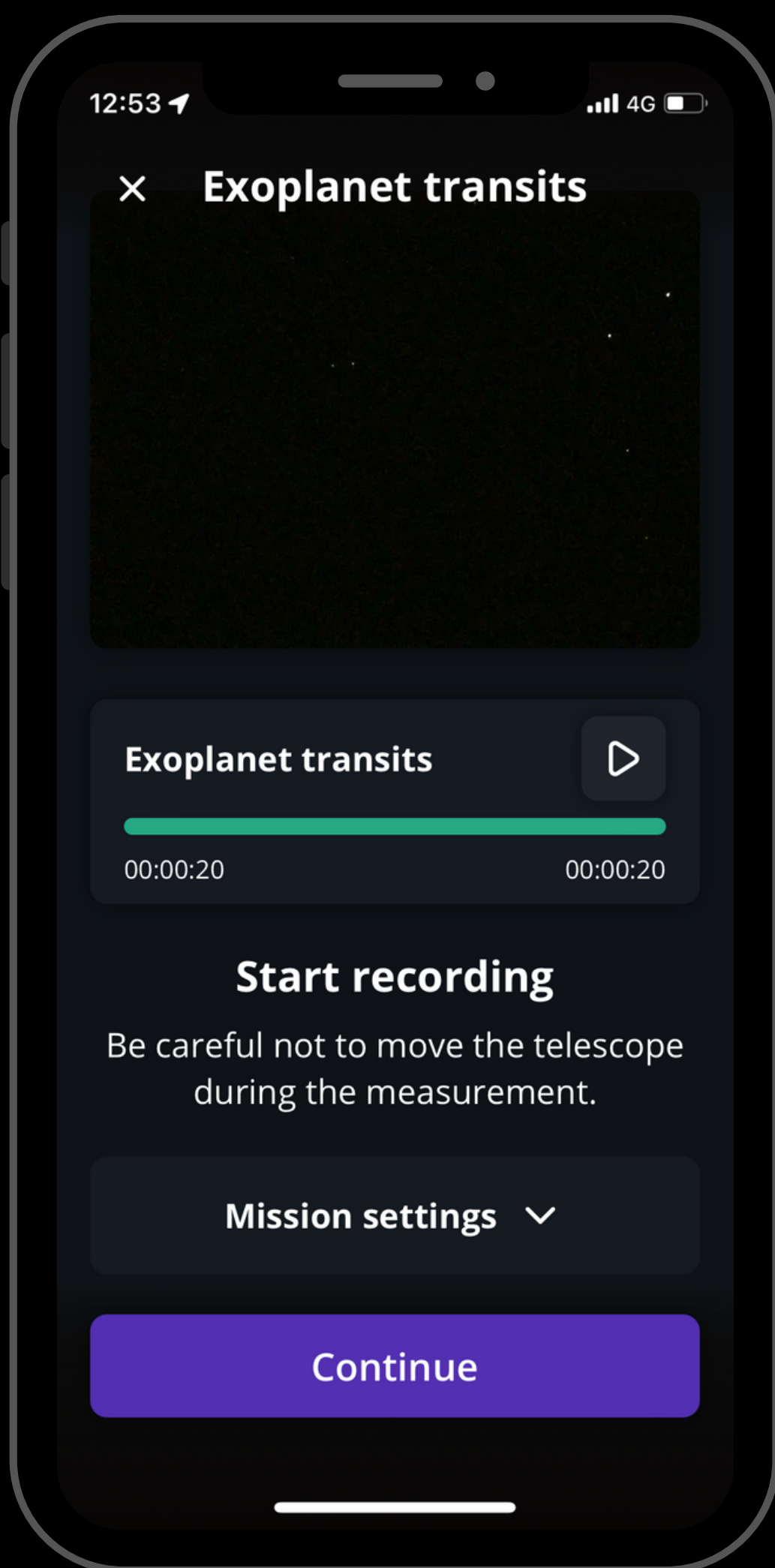


4

## Complete observation

During the observation, you can see the target star but the transiting exoplanet will not be visible on your phone screen.

Once the recording is over, click on **Continue** to calibrate your sensor.



# DURING OBSERVATION

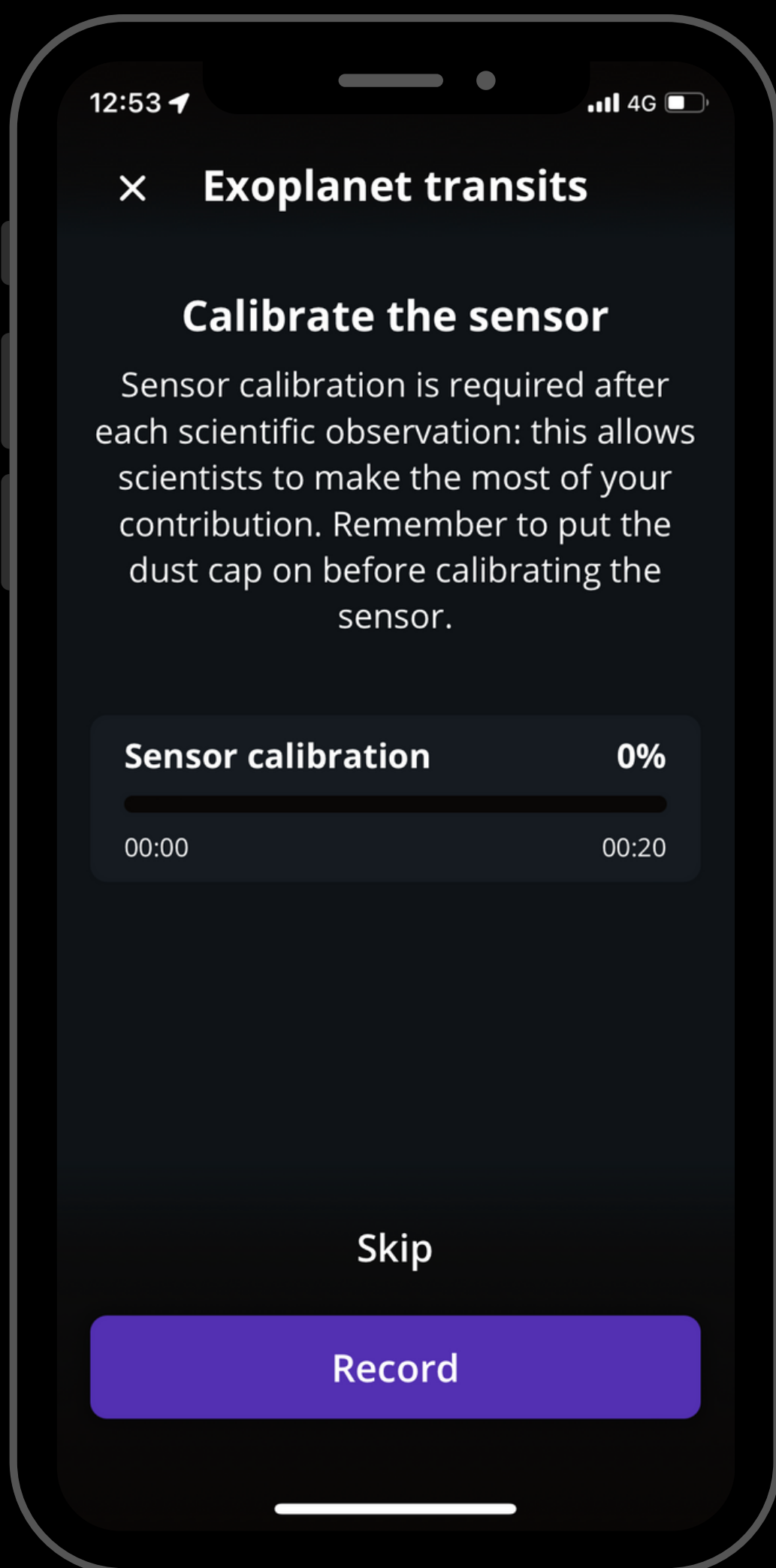


4

## Complete observation

This calibration step gathers *Dark Frames* which will help us better analyze your observation. You must put the dust cap on your telescope before recording the calibration.

After this step, a final message appears: “Recording complete”. The mission is over.





# POST - OBSERVATION



1. **Share your data:** Once you are at home, please upload your data to our server. Our team of scientists will analyze your observation to check if you detected the transit. If you need help, please read these guidelines on “[how to upload my data](#)”.

2. **Tell Unistellar you have participated:** To make sure your contribution is properly processed and you are credited for the result, always fill out this [Exoplanets Observation Report](#). It asks for your name, the serial number of your telescope, and the name of the scientific mission you just accomplished.

CITIZEN SCIENCE

# EXOPLANET TRANSITS



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# YOU'RE DONE

We will send you the result of your scientific mission through our Slack communication platform, typically within a week or so.

## Great Work, Citizen Astronomer!



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