

Friday, 26.06.2020

Time UTC	Time CEST	Speaker	Subject	
12:50 - 13:00	14:50 - 15:00		Announcements	
13:00 - 13:25	15:00 - 15:25	Giuliana Fiorentino	The distance ladder in the ELT era	<a href="#">Q&amp;A</a>
13:25 - 13:50	15:25 - 15:50	Stefano Casertano	JWST and the distance ladder	<a href="#">Q&amp;A</a>
13:50 - 14:15	15:50 - 16:15	Elisabeth Krause	Future probes of dark energy	<a href="#">Q&amp;A</a>
14:15 - 14:40	16:15 - 16:40	Raphael Flauger	The future of the CMB	<a href="#">Q&amp;A</a>
14:40 - 15:10	16:40 - 17:10	Panelists & speakers	Discussion & farewell	<a href="#">Q&amp;A</a>
Panelists: L. Verde, T. Shanks, S. Jha, J. L. Bernal				
<a href="#">Link to YouTube Video</a>				

## 17 Giuliana Fiorentino - ELT and the distance ladder

 There are already 3 questions with 14 upvotes. Here are the most popular ones:

### **How well will ELT do for other tracers (ex. RR Lyrae stars)?**

*by Anonymous | 6 upvotes*

### **Do your ELT simulations account for strong PSF distortions ?**

*by fred courbin | 5 upvotes*

### **Can you comment on the improvements for TRGB**

*by Anonymous | 3 upvotes*

## 18 Stefano Casertano - JWST and the distance ladder

 There are already 5 questions with 17 upvotes. Here are the most popular ones:

### **Would you expect TRGB distance accuracy to exceed Cepheids in future?**

*by Anonymous | 5 upvotes*

- **Stefano Casertano** 4:20 AM

It's possible, but not easy. The TRGB distance accuracy per galaxy depends on the number of stars within  $\sim 1$  mag of the break, the photometric accuracy per star, how clean the sample is, and systematics. Because it is a statistical measurement based on the full distribution of luminosities near the break, systematics are harder to check for and control. While the precision of the

distance measurement can be high, validating its accuracy is intrinsically more challenging than for Cepheids. That said, they are complementary methods, and cross-calibration will be valuable.

### **Is there any hope to get a direct geometrical distance measurement of a SNIa host with JWST ?**

*by Mickael Rigault | 4 upvotes*

- **Stefano Casertano** 4:20 AM

If you are thinking of methods such as eclipsing binaries, it seems difficult to push much beyond the Local Group, even with JWST. I would love to find out otherwise!

**Stefano Casertano** 4:20 AM

### **3. How your result on amplitude ratio would change using the Inno AH/Av ratio? They show that this is independent on period.**

*by Giuliana Fiorentino | 4 upvotes*

Our amplitudes and light curves are measured consistently, and the period dependence is weak, so I doubt the results would be different. Note that we have few IR light curve points per Cepheid, so I am not sure how well we would be able to use the Inno method. We would be happy to look into it.

### **4. How much would JWST improve over HST for lensed SN/QSO time delay measurements**

*by Anonymous | 4 upvotes*

I am grateful to the experts for input on that question. I, however, am not one. The paper I referenced (<https://ui.adsabs.harvard.edu/abs/2020MNRAS.493.4783Y/abstract> ) suggests a very substantial improvement (perhaps a factor of 2) thanks to the ability to obtain resolved kinematics of the stellar population in the lens; as I understand, further work is ongoing to test improvements in the model analysis as well.


### **5. Can you explain how to get a 4% distance to Coma with 1 galaxy? N4258 at 7 Mpc has a PL scatter of 0.4 mag and Coma is 14x more distant with 14x**

## **worse crowding.**

*by Anonymous | No upvotes*

Simplistically, the width of the Leavitt Law as observed - which is related to both S/N and crowding scatter - need not be the limiting factor in the distance accuracy, as long as we can correct for the crowding effects reliably *on a statistical basis*. That said, the Cepheids we will target in NGC 4921 are intrinsically bright and in low surface brightness regions, and are expected to be not much more crowded than the inner field in NGC 4258. Of course, we are also spending 17 orbits to ensure that the photometric errors match our needs. We trust our error projections, which are based on actual locations and periods of individual Cepheids; but as stated during the talk, we also view this as an experiment that will teach us the limits of what is possible with HST. (edited)

## **19 Elisabeth Krause - Future probes of dark energy**

 There is already 1 question with 1 upvote. Here are the most popular ones:

### **How would the DES-Y3 error bars on S8 compare to DES-Y1?**

*by Anonymous | 1 upvote*

### **How your result on amplitude ratio would change using the Inno AH/Av ratio? They show that this is independent on period.**

*by Giuliana Fiorentino | 4 upvotes*

### **How much would JWST improve over HST for lensed SN/QSO time delay measurements**

*by Anonymous | 4 upvotes*

### **Can you explain how to get a 4% distance to Coma with 1 galaxy? N4258 at 7 Mpc has a PL scatter of 0.4 mag and Coma is 14x more distant with 14x worse crowding.**

*by Anonymous | No upvotes*

## **20 Raphael Flauger - The future of the CMB**

 There are already 4 questions with 10 upvotes. Here are the most popular ones:

## **Is surprising your cmb talk do not mention**

by Anonymous | 4 upvotes

## **Is the PICO mission funded yet?**

by Anonymous | 2 upvotes

- **Lloyd Knox** 1:06 AM

I'll also give answers to questions posed to Raphael. **Is the PICO mission funded yet?** by Anonymous | 2 upvotes

*No. PICO was part of a study commissioned by NASA to help them decide whether to have a "Probe" class mission opportunity. They funded eight such studies. Best possible outcome of the PICO study: a probe class mission opportunity is created. Then people will compete for it.*

## **Where do you expect the observations that point to the solution of the H0 tension will come from - the CMB or somewhere else?**

by Anonymous | 2 upvotes

- **Lloyd Knox** 1:06 AM

*On the CMB side, precision measurements of polarization from ell of  $\sim 100$  to ell of a few thousand will be very helpful. This gives us a very clean handle on the dynamics of modes that entered the horizon during the epoch at which there must be modifications to get teh sound horizon down. So we expect tightening up measurements across these angular scales will be very constraining of such models. Improvements over this ell range are comign from SPT-3G, AdvACTpol and eventually SO and then CMB-S4.*

## **Why so small information on the science cmb tests.?.**

by Anonymous | 2 upvotes

## **Discussion Panel 5**

 There are already 2 questions with 4 upvotes. Here are the most popular ones:

## **Why no mention to science tested with the cmb was mentioned, eg inflation or other, mainly**

by Anonymous | 3 upvotes

- **Licia verde** 2:19 PM

*I'll attempt my version of an answer, Raphael Flauger can disagree with me. Inflation is certainly central in the science case of future CMB experiments, especially those observing the large-scale polarization signal. ( and those will also need to observe small scales to clean the primordial signal from the secondary signals). This was in fact mentioned in the talk. However, this issue is somewhat disconnected from the  $H_0$  tension, hence the less emphasis given.*

## **What are the main assumptions that matter for the local hole analysis?**

by Anonymous | 1 upvote