

# Astronomy and Space Sciences Seminar Series

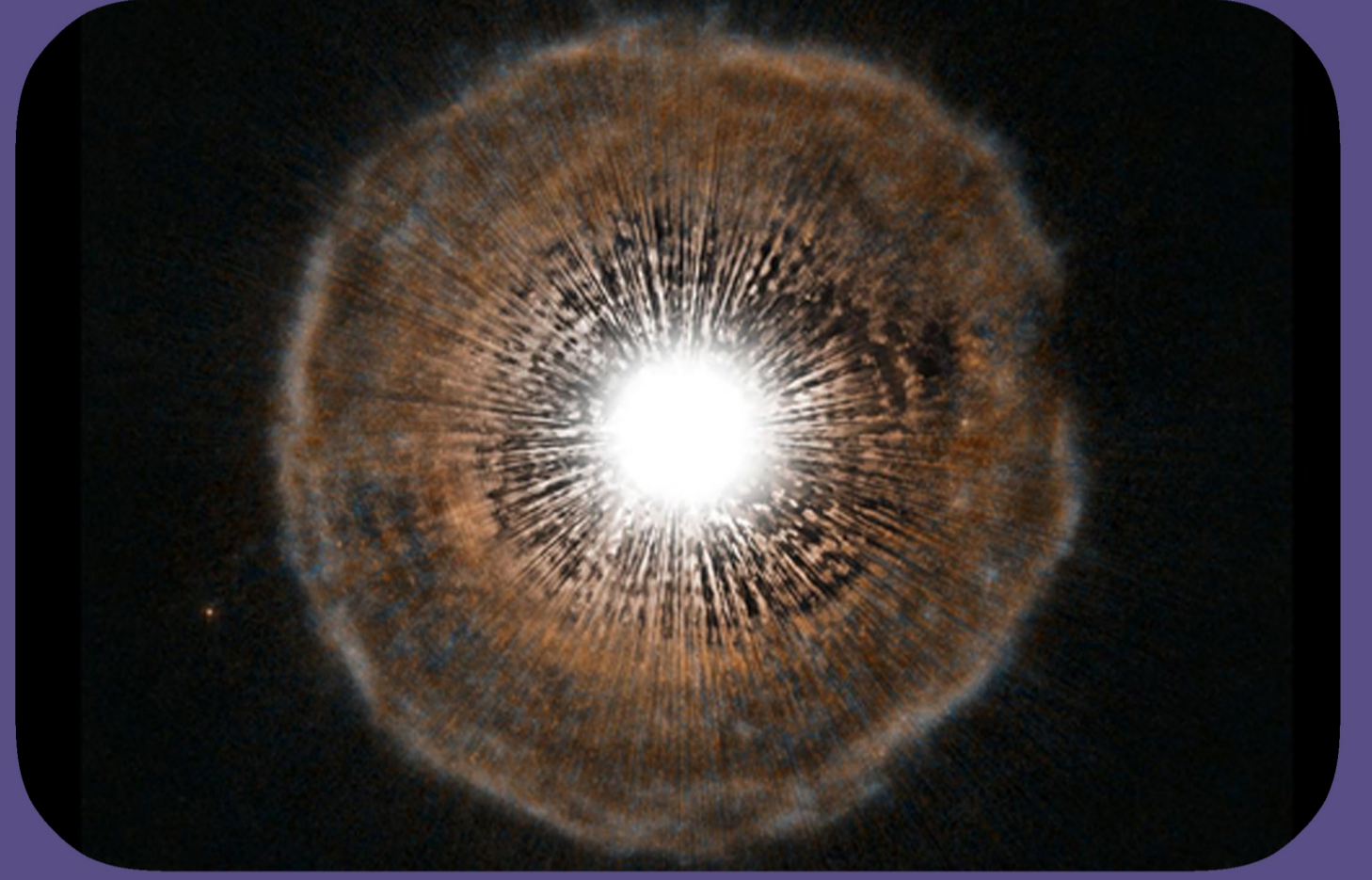
## What is the Tension in the Hubble Constant Telling Us?

Virtual Venue: November 6 2021, 19:00 - 20:00 (GMT +3), Zoom Meeting ID: 936 7532 2332



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Credit: ESA/NASA

An important and unresolved question in cosmology today is whether there is new physics that is missing from our current standard Lambda Cold Dark Matter (LCDM) model. Recent measurements of the Hubble constant,  $H_0$  -- based on Cepheids and Type Ia supernovae (SNe) -- are discrepant at the 4-5-sigma level with values of  $H_0$  inferred from measurements of fluctuations in the cosmic microwave background (CMB). The latter assumes LCDM, and the former assumes that systematics have been fully accounted for. If real, the current discrepancy could be signaling a new physical property of the universe. I will present new results based on an independent calibration of SNe  $H_0$  based on measurements of the Tip of the Red Giant Branch (TRGB). The TRGB marks the luminosity at which the core helium flash in low-mass stars occurs, and provides an excellent standard candle. Moreover, the TRGB method is less susceptible to extinction by dust, to metallicity effects, and to crowding/blending effects than Cepheid variable stars. I will address the current uncertainties in both the TRGB and Cepheid distance scales, as well as discuss the current tension in  $H_0$  and whether there is need for additional physics beyond the standard LCDM model.

 YouTube

Live Stream:

<https://www.youtube.com/c/TUBITAKTBAE>