

# AIAA HOU TX LUNCH AND LEARN

MAY 7<sup>TH</sup>  
11:30AM - 1:00PM

Bay Area Houston Economic Partnership  
1st Floor Conference Room  
1150 Gemini St  
Houston, TX 77058

# BOMB SHOT

Exploring the technology behind Cixin Liu's  
**The Three-Body Problem**



Presented by:

**Dr. Albert Allen Jackson IV, Ph.D, AFIAA, FBIS**

Consultant, Johnson Space Center, Engineering Division  
Permanent Visiting Scientist, Lunar Planetary Institute

Flyer & Header by Jake Peery for AIAA Houston

The flyer and header design features the AIAA Houston logo on the left, followed by the event title 'LUNCH AND LEARN' in large, bold, white letters. Below this, the date 'MAY 7<sup>TH</sup>' and time '11:30AM - 1:00PM' are listed, along with the venue 'BAHEP, 1st Floor Conference Room, 1150 Gemini St, Houston, TX 77058'. The featured speaker 'Dr. Albert Allen Jackson IV, Ph.D, AFIAA, FBIS' is mentioned. On the right side, the title 'BOMB SHOT' is displayed in large, bold, black letters, with the subtitle 'Exploring the technology behind Cixin Liu's The Three-Body Problem' below it.

A video recording will be published on the YouTube [channel](#) of AIAA Houston SpaceGeekSpeak.



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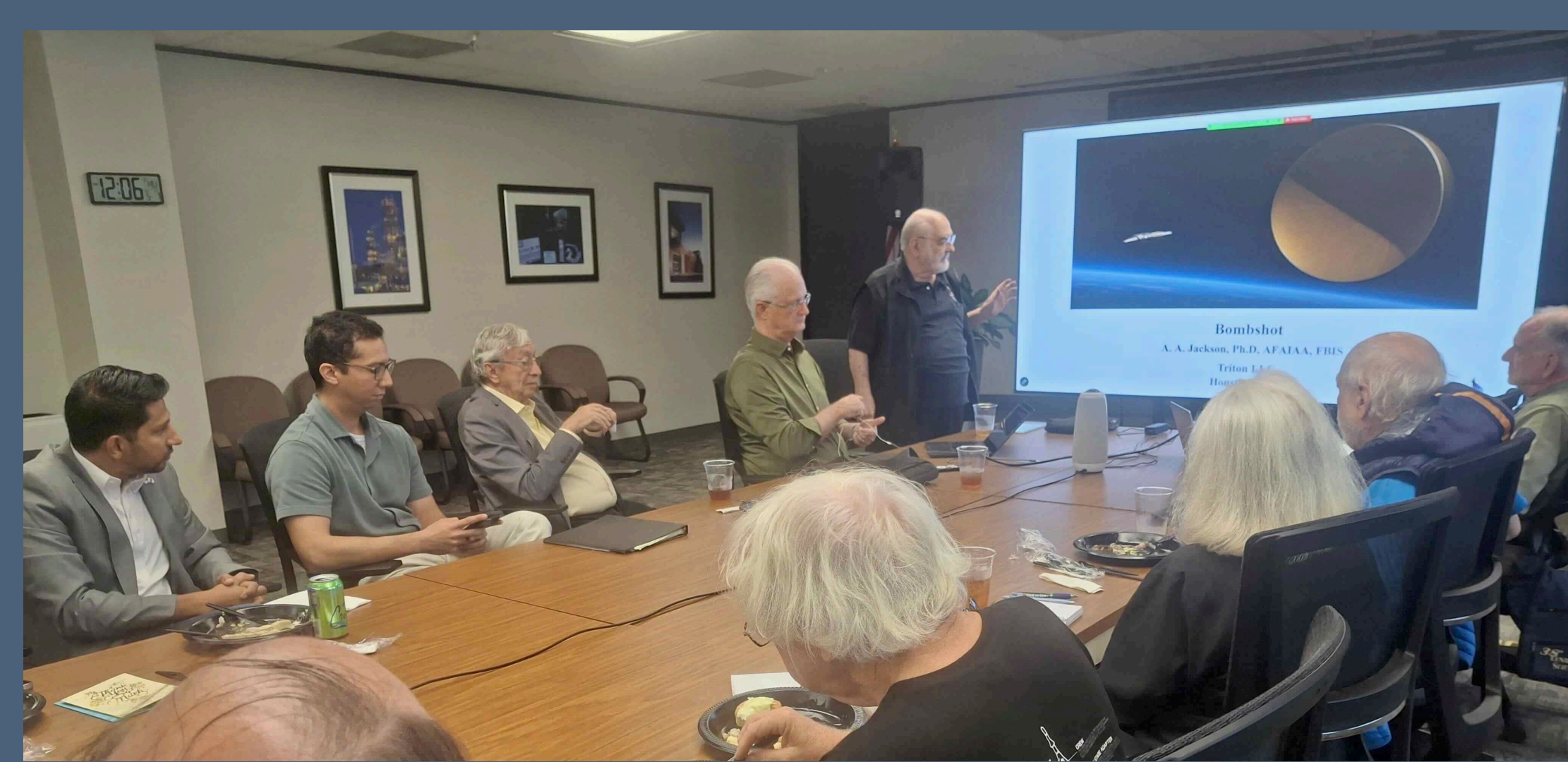
AIAA Houston Lunch & Learn by [Dr. Albert Allen Jackson IV](#)



May 7, 2026 at [BAHEP](#) on Gemini Street in Houston

[Bombshot](#), A Physics Look at Interstellar Travel from the 2024 Netflix Series, "3 Body Problem"

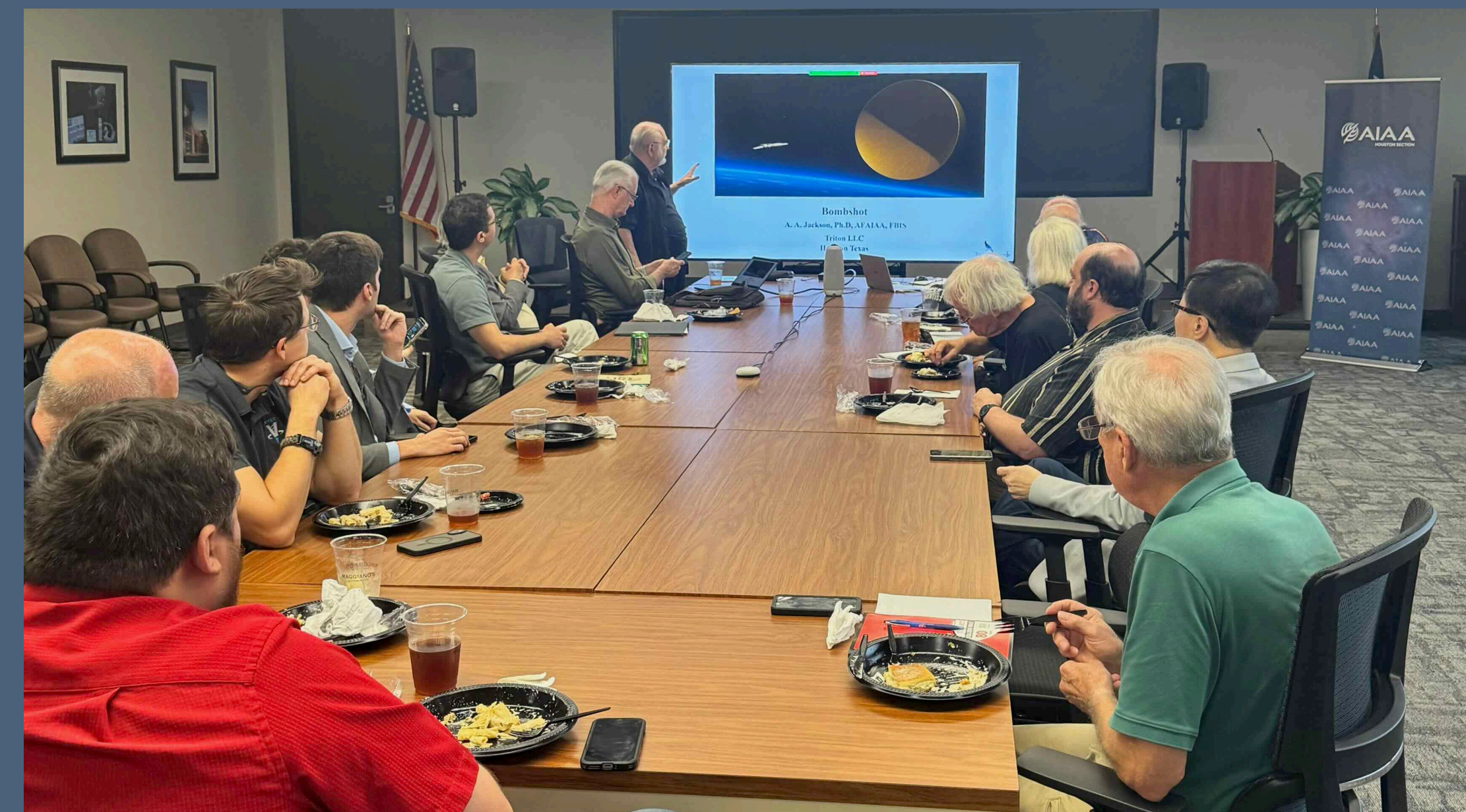


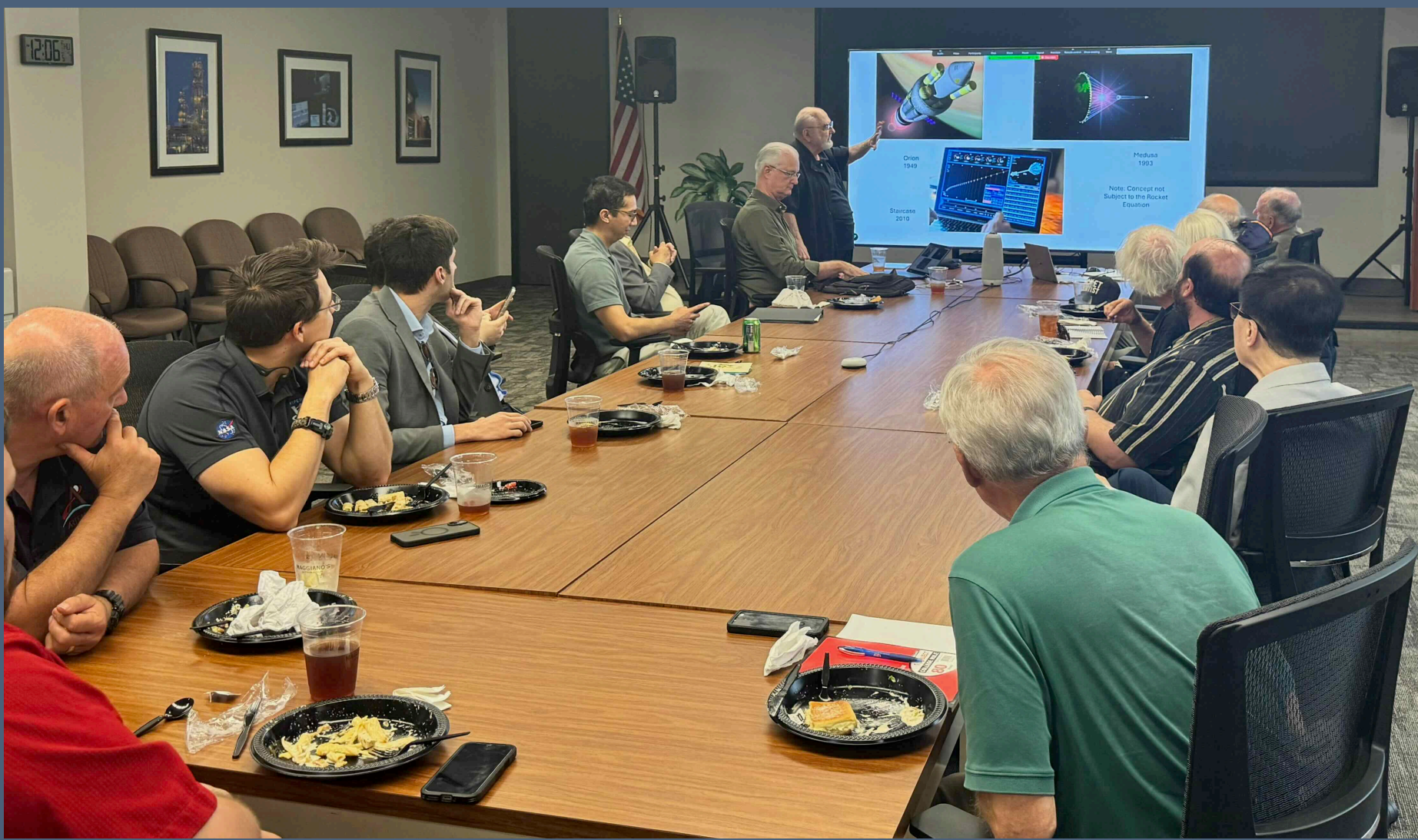


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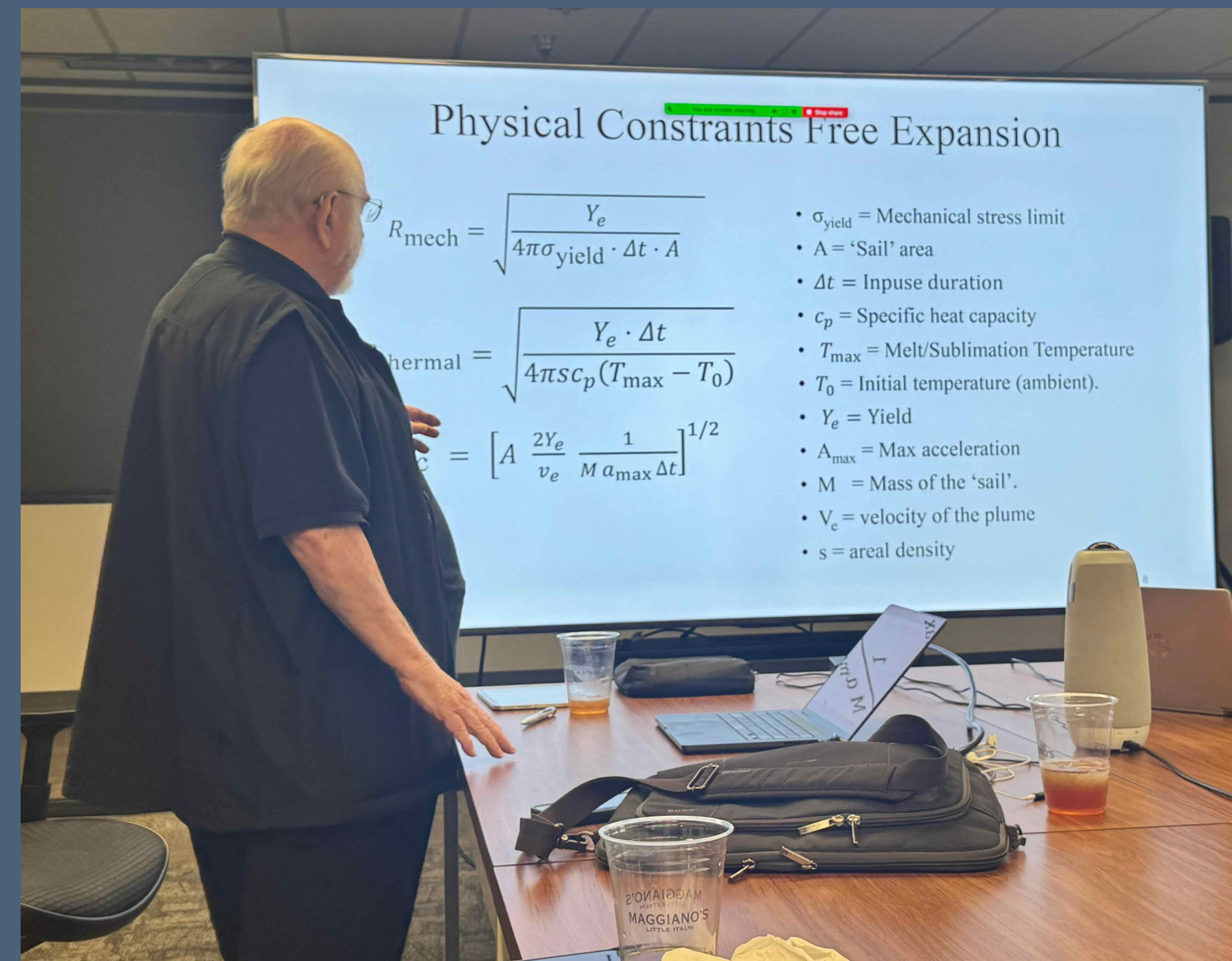


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## Physical Constraints Free Expansion

$$R_{\text{mech}} = \sqrt{\frac{Y_e}{4\pi\sigma_{\text{yield}} \cdot \Delta t \cdot A}}$$

$$R_{\text{thermal}} = \sqrt{\frac{Y_e \cdot \Delta t}{4\pi s c_p (T_{\text{max}} - T_0)}}$$

$$s = \left[ A \frac{2Y_e}{v_e} \frac{1}{M a_{\text{max}} \Delta t} \right]^{1/2}$$

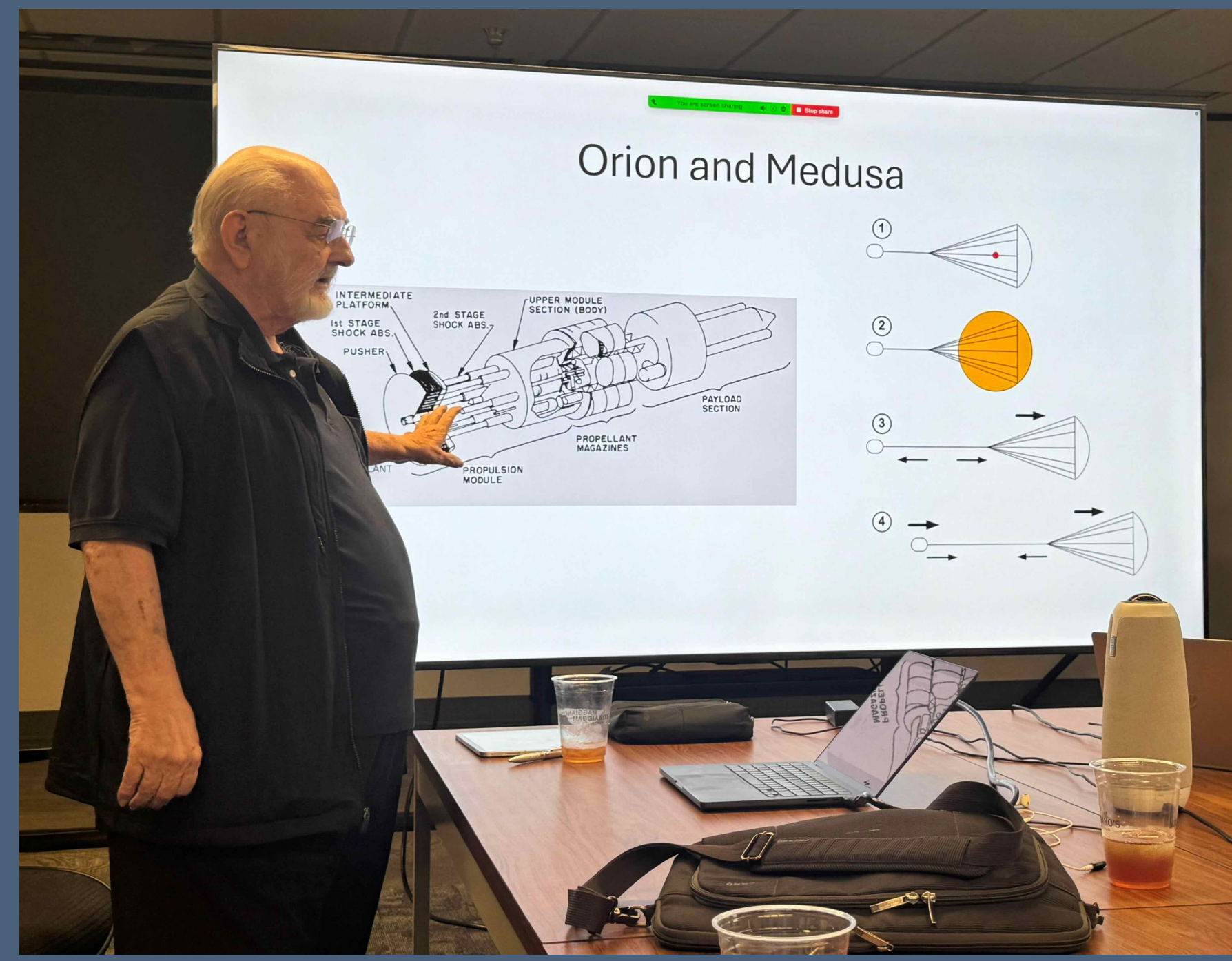
- $\sigma_{\text{yield}}$  = Mechanical stress limit
- $A$  = 'Sail' area
- $\Delta t$  = Impulse duration
- $c_p$  = Specific heat capacity
- $T_{\text{max}}$  = Melt/Sublimation Temperature
- $T_0$  = Initial temperature (ambient).
- $Y_e$  = Yield
- $A_{\text{max}}$  = Max acceleration
- $M$  = Mass of the 'sail'.
- $v_e$  = velocity of the plume
- $s$  = areal density



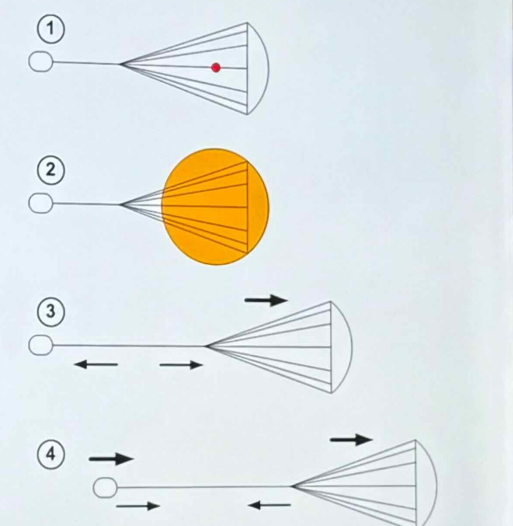
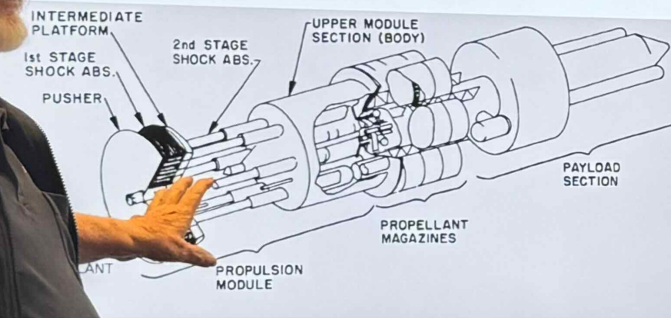
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## Orion and Medusa



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AIAA Houston Chair John Rangel & Dr. Albert Allen Jackson IV

