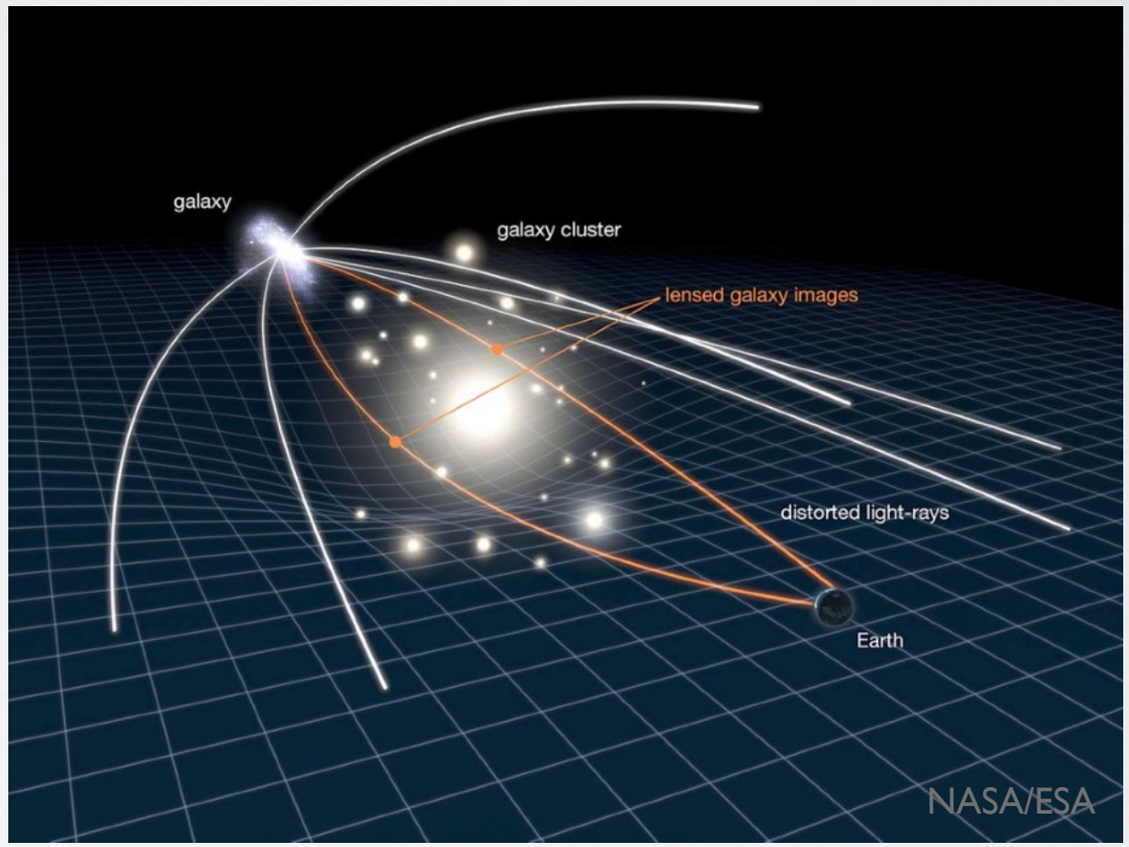
Week 8 - #2

Calculus of Variations (II)



Today: Ch 6.3-6.7

Next Class: Ch 6.6, 7.1-7.3

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Despite his best efforts, the author apologizes for any inaccurate or outdated information and references.

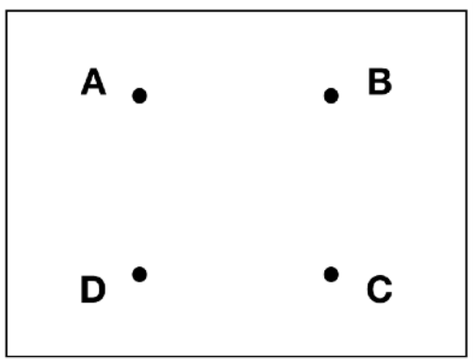
Classical Mechanics I (Spring 2026): Quiz #14

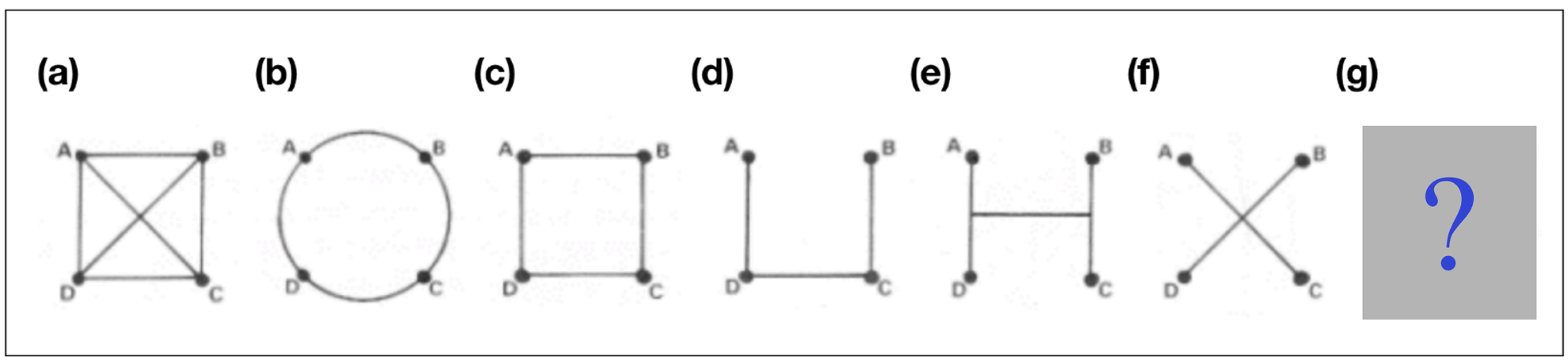
— [open book and open note, but no cellphone or laptop, drop it off as you leave the class] —

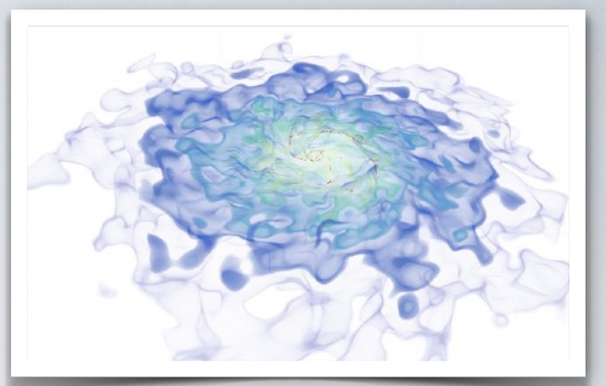
Please write down your name and student ID in the top right corner. (0.0 pt: no paper found with your name / 0.5 pt: paper found with your name and some answers / 1.0 pt: good answers)

1. Thornton & Marion, Problem 6-3. (Please do not worry if you end up not being able to solve the problem. Just try as best as you can, and think about what the roadblock is.)

2. The four towns A, B, C and D are located at the corners of the square of side length 1. You want to connect all four towns with roads. What configuration gives the shortest total road length? What is that minimum length? Is this configuration included among the options below?



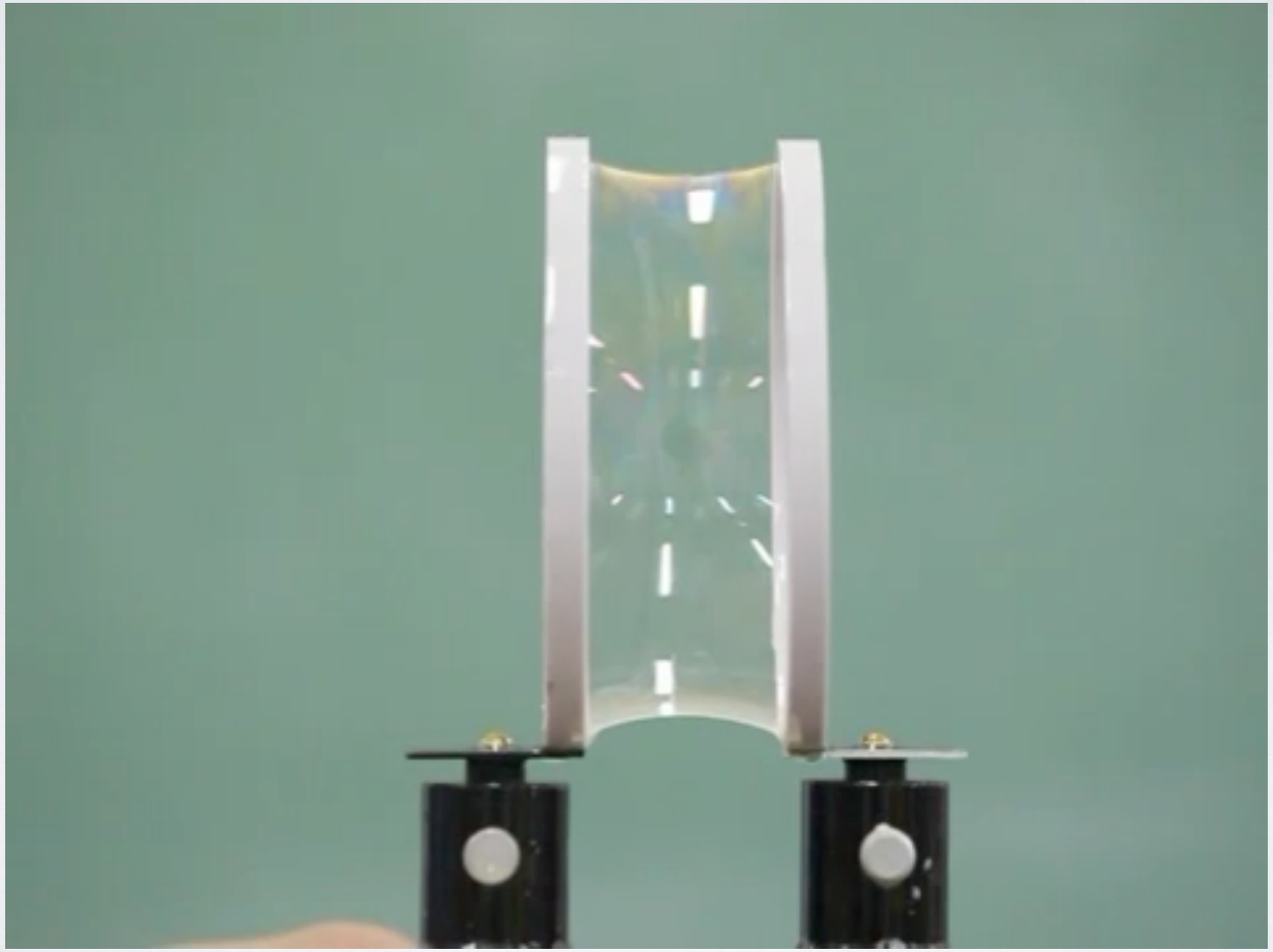




Soap Film

Soap Film and Motorway Problem

- We utilize the soap film to find the solution experimentally.



https://www.youtube.com/watch?v=_2DRRDndyD0

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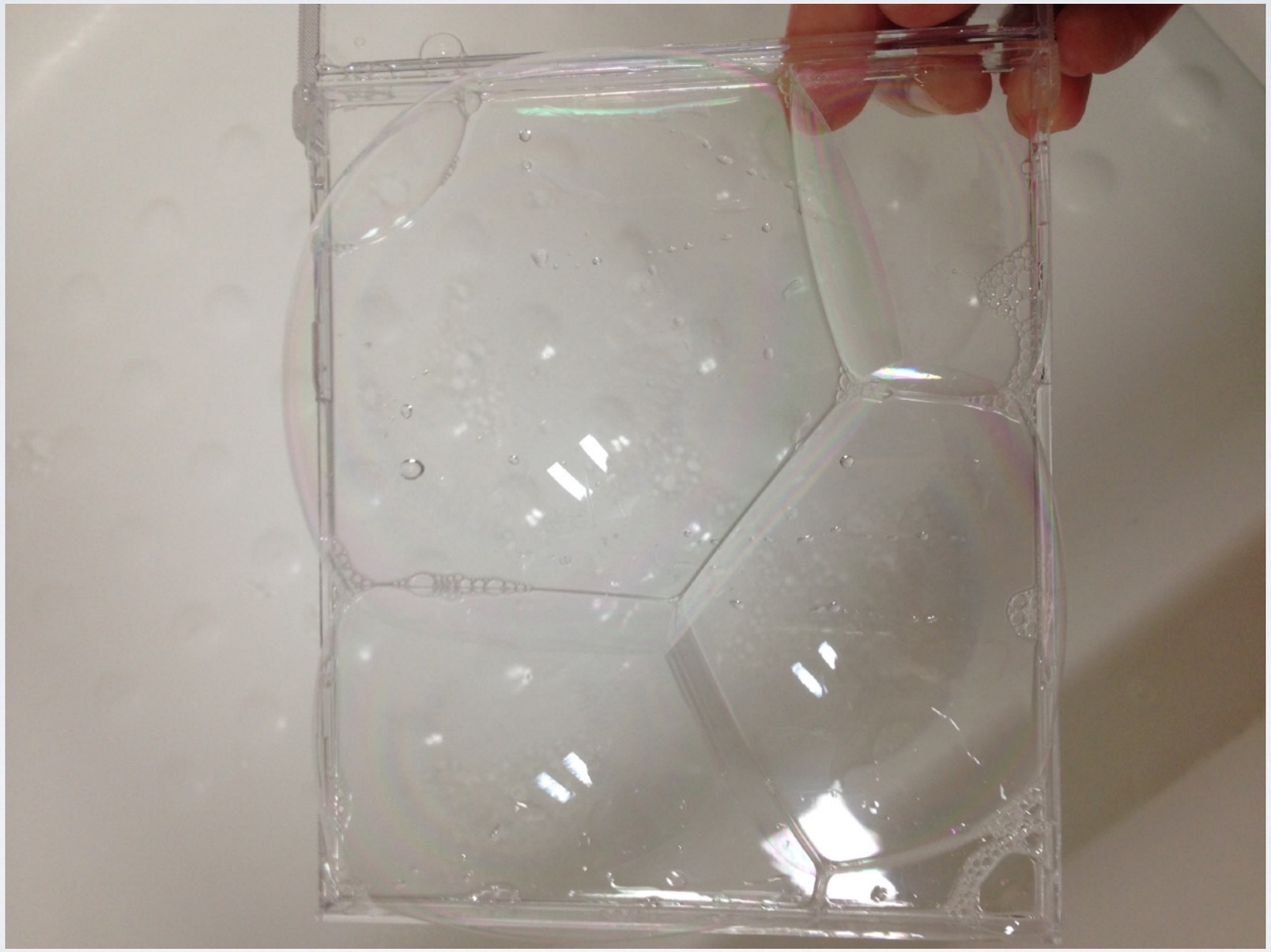

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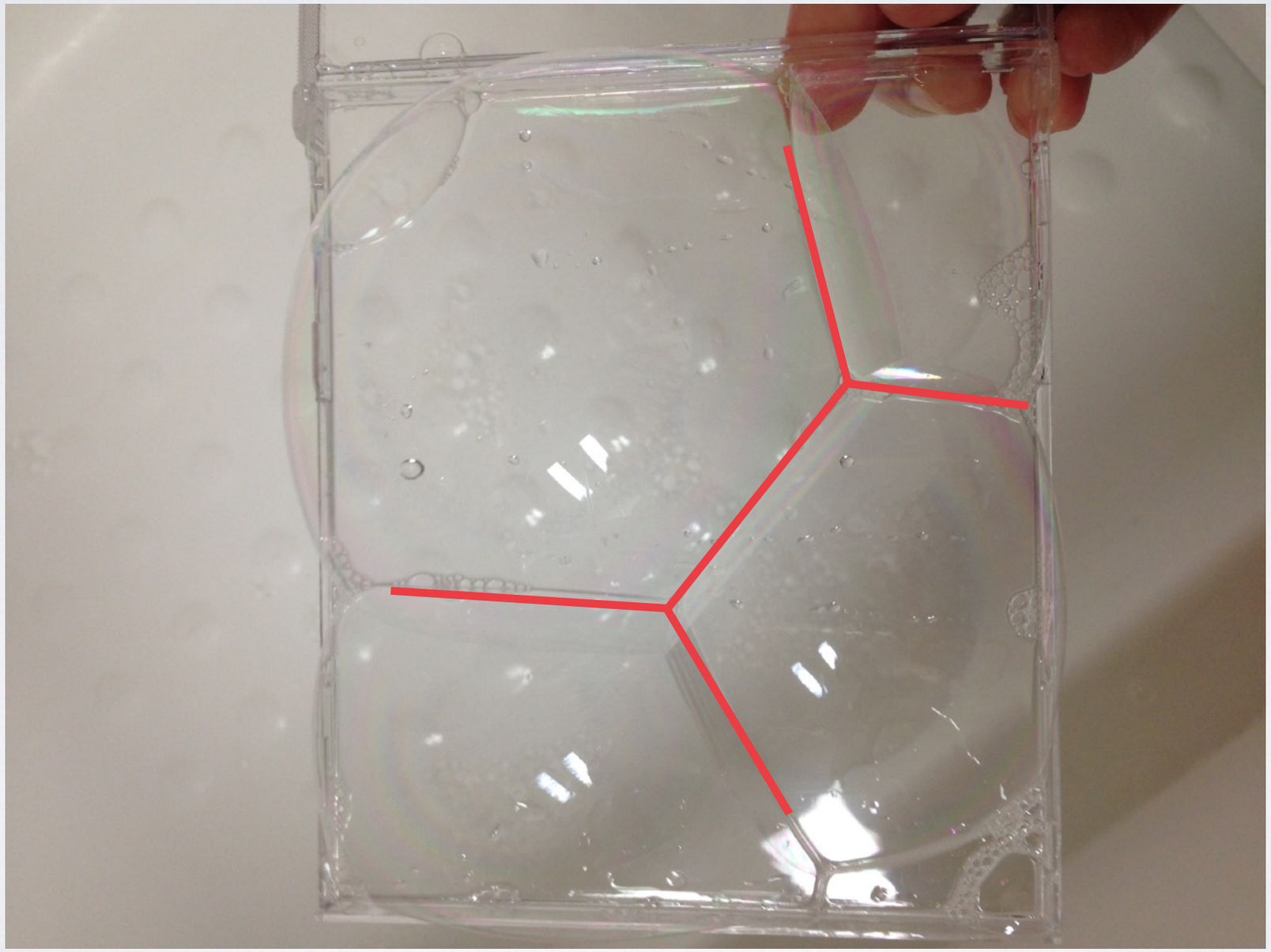

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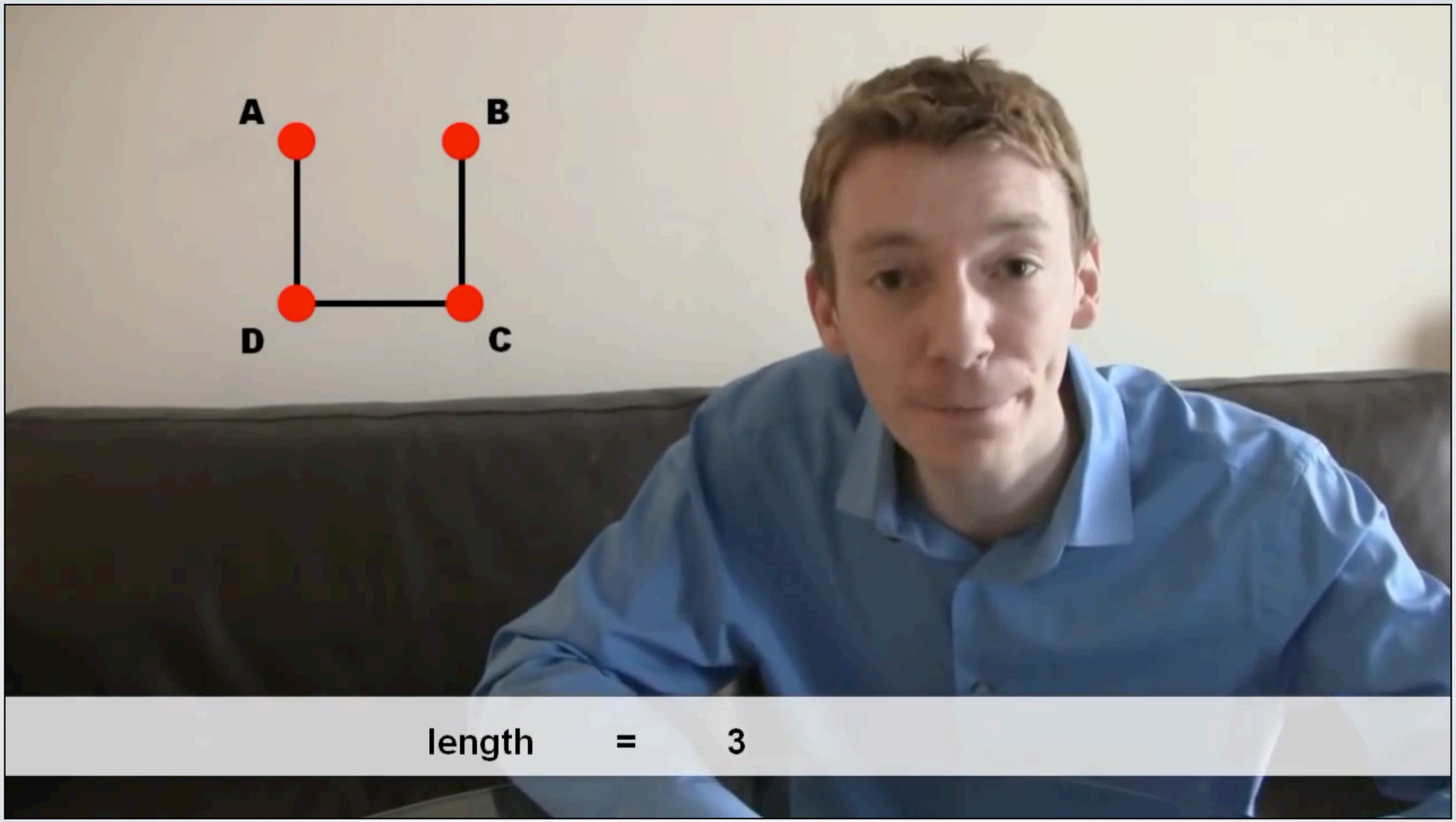

Wired

Soap Film and Motorway Problem

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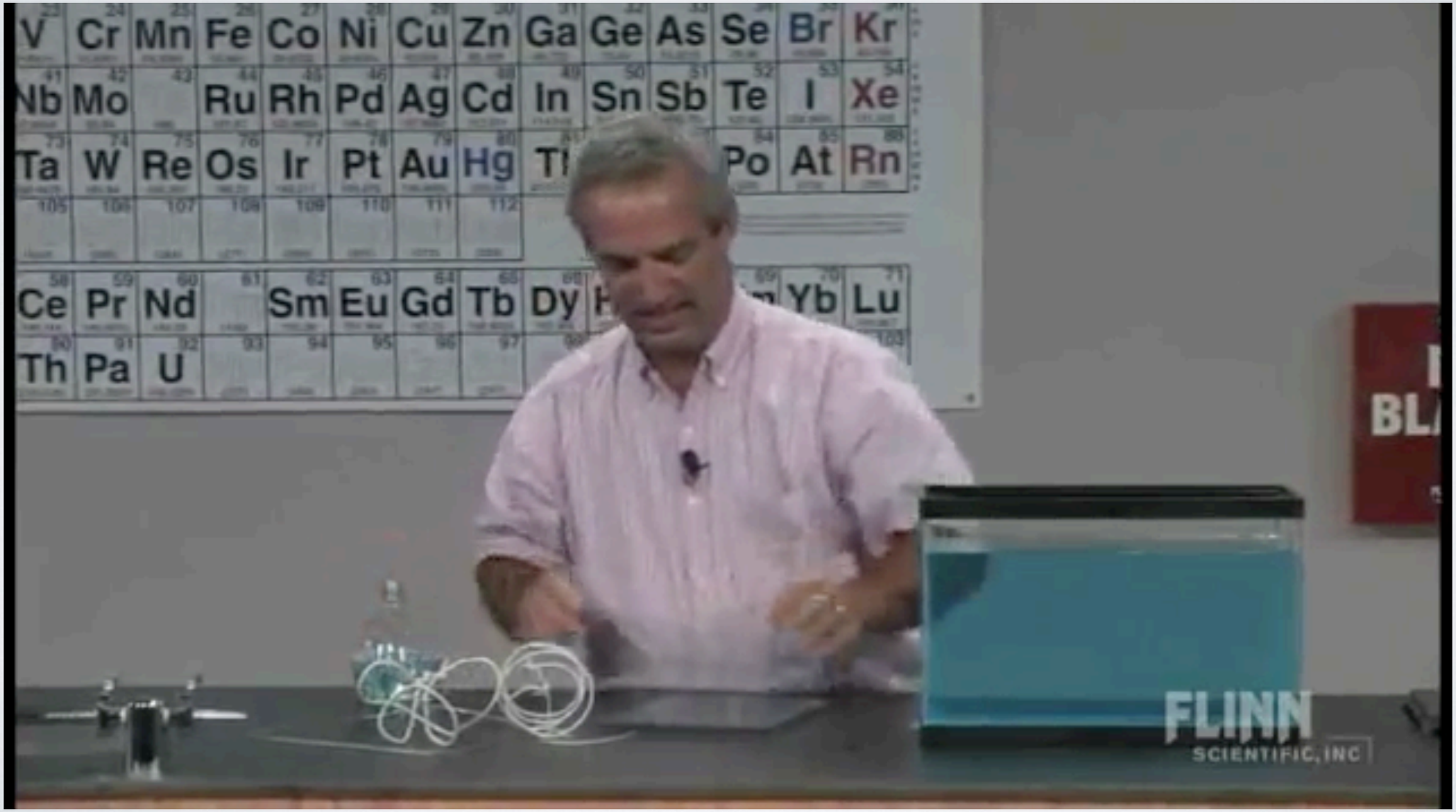

https://www.youtube.com/watch?v=52wVrtA5krY

Soap Film and Variational Problem

- We utilize the soap film to find the solution experimentally.

https://calculate.org.au/2016/02/19/

http://m.blog.daum.net/kyr824/575