

Satellite of Weird

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VASCO

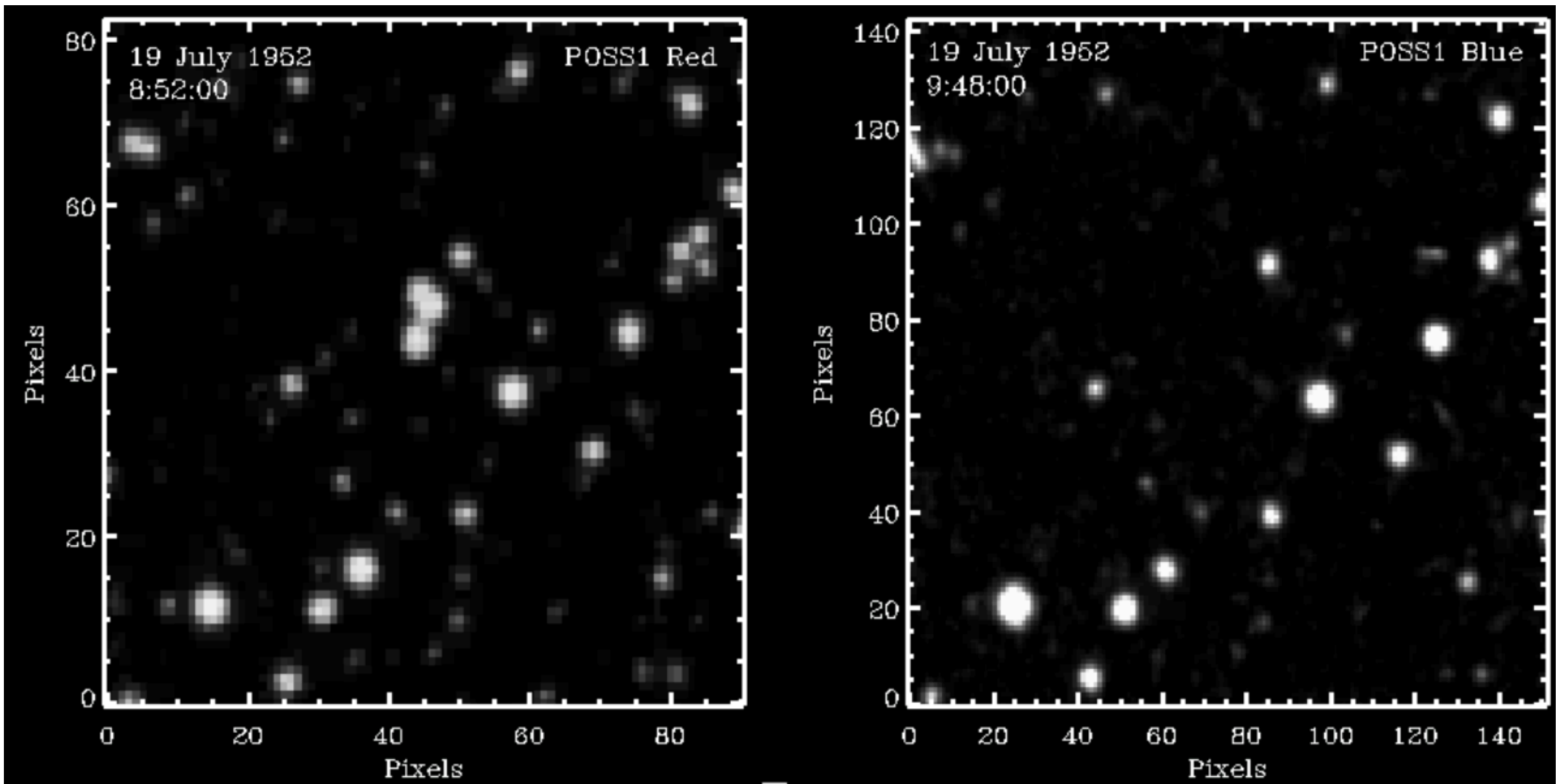
Vanishing and Appearing Stars across a
Century of Observations

- Citizen science project led by Dr Beatriz Villarroel
- What's in old photos that isn't there now?
- Comparing lots of sky surveys; POSS I, POSS II, Pan-STARRS, etc
- <https://arxiv.org/abs/2009.10813>



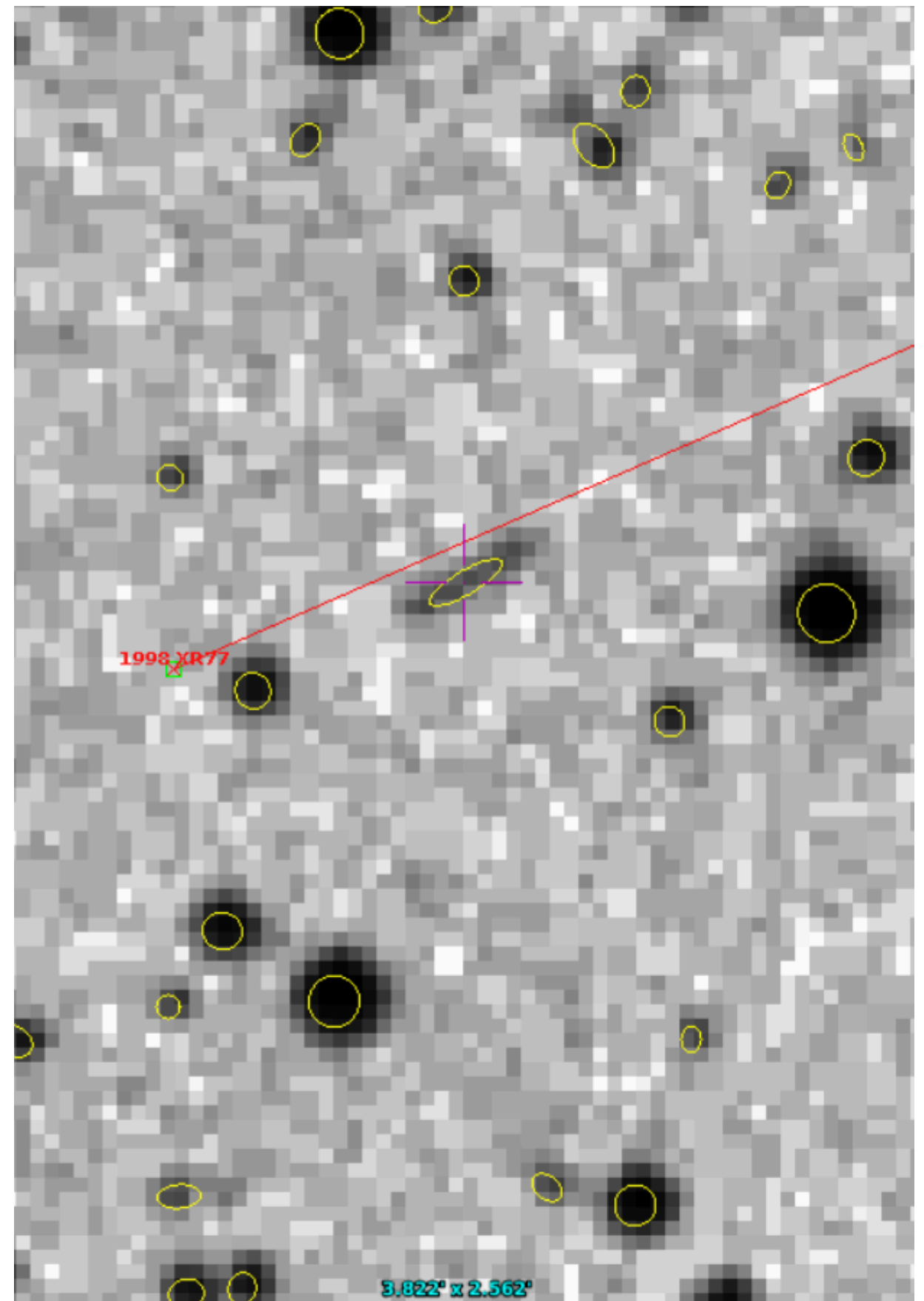
Finding “Transients”

- POSS I, the Palomar Observatory Sky Survey
- Two plates; red and blue exposures, taken the same night
- Some star-like objects are in one, but not the other
- <https://arxiv.org/abs/2106.11780>



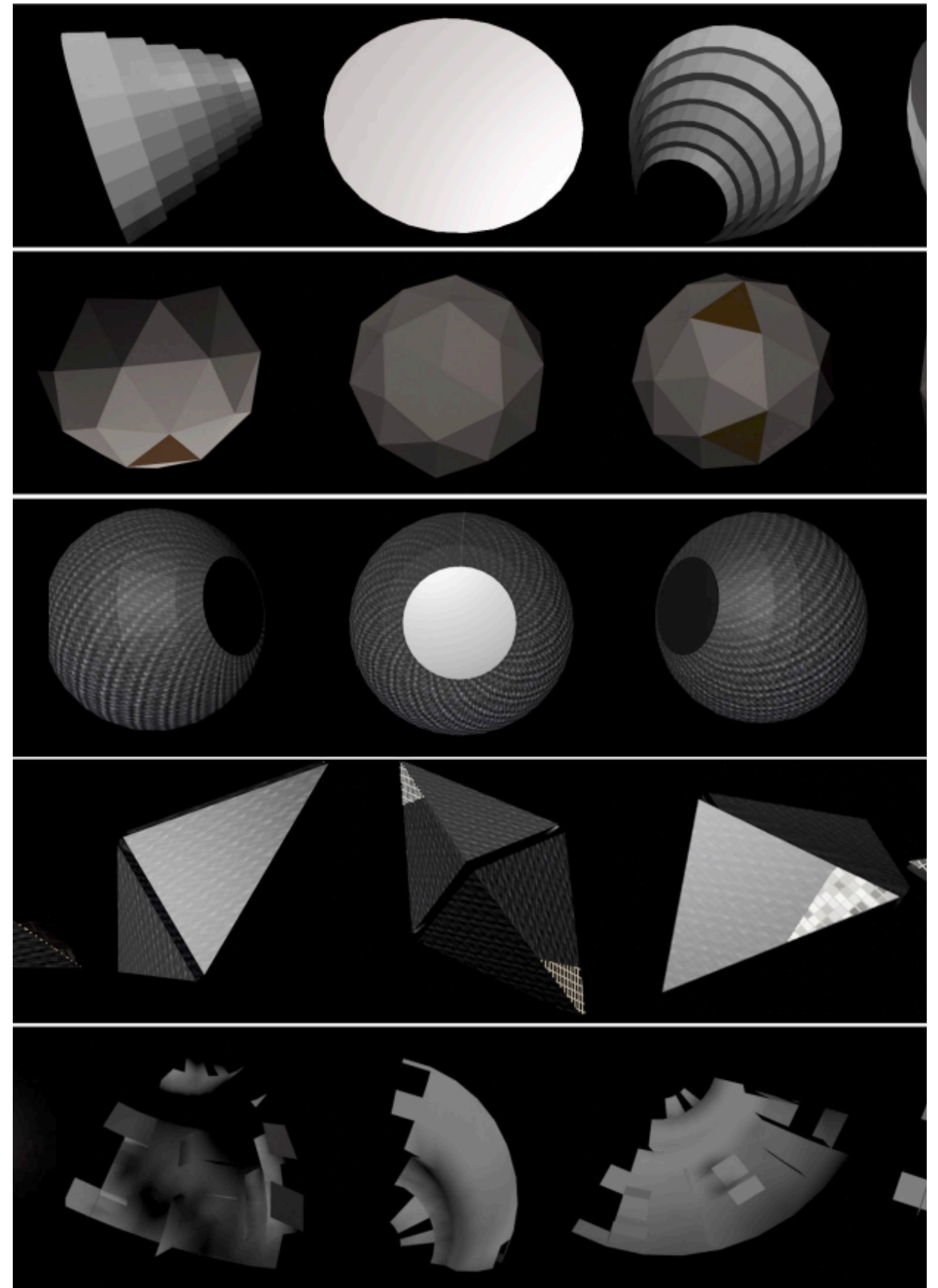
Ruling things out

- Used image analysis to trawl the complete dataset
- 298165 transients
- Not plate defects, or cosmic rays hitting the plate...
- 17-22 sigma *deficit* of transients *inside Earth's shadow*
- <https://arxiv.org/abs/2604.18799>



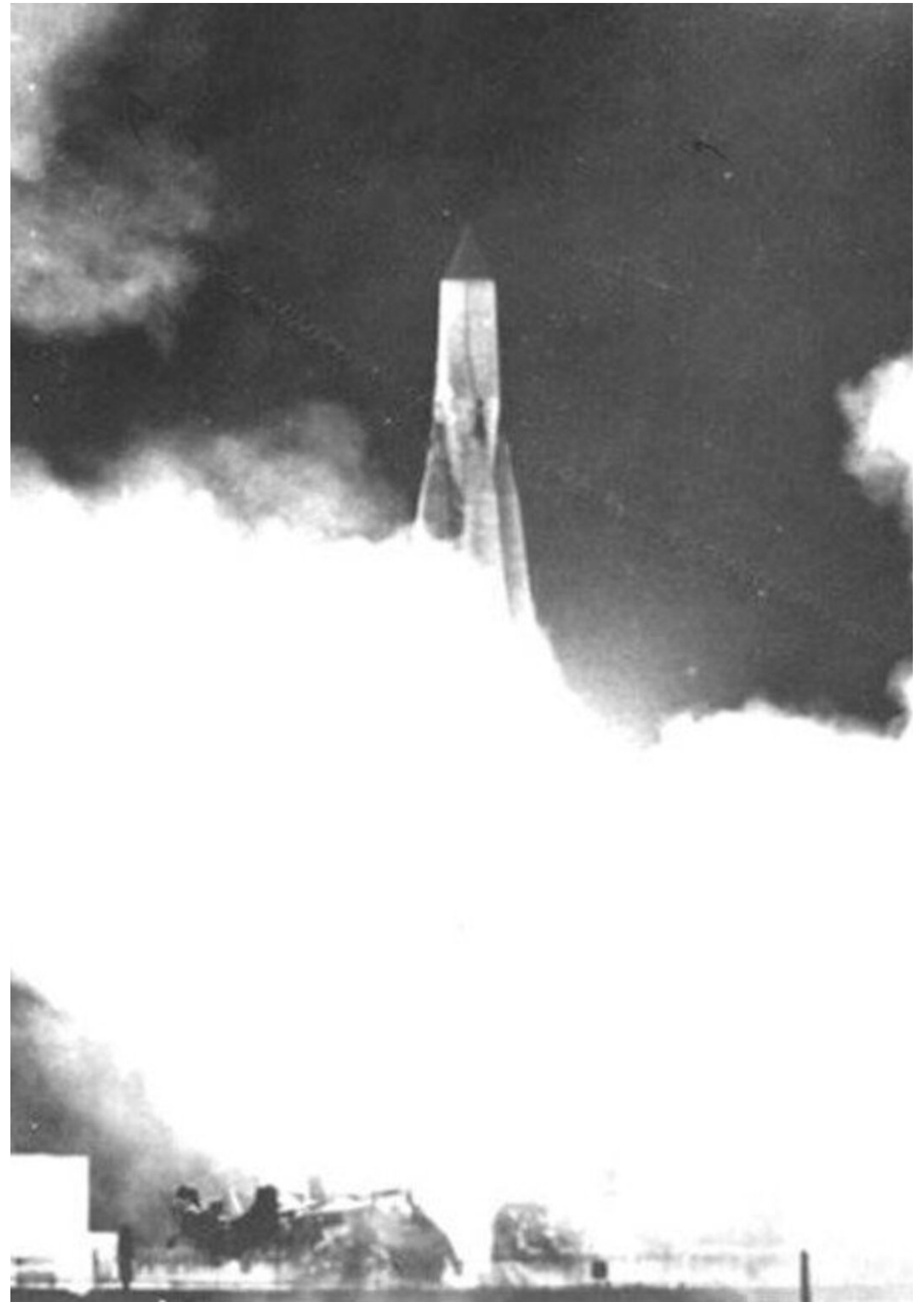
So what's up there?

- Transients are consistent with “fast reflections off high-albedo objects in geosynchronous orbits around Earth”
- A lot like:
 - Iridium flares
 - ISS passes
 - All the bloody starlinks



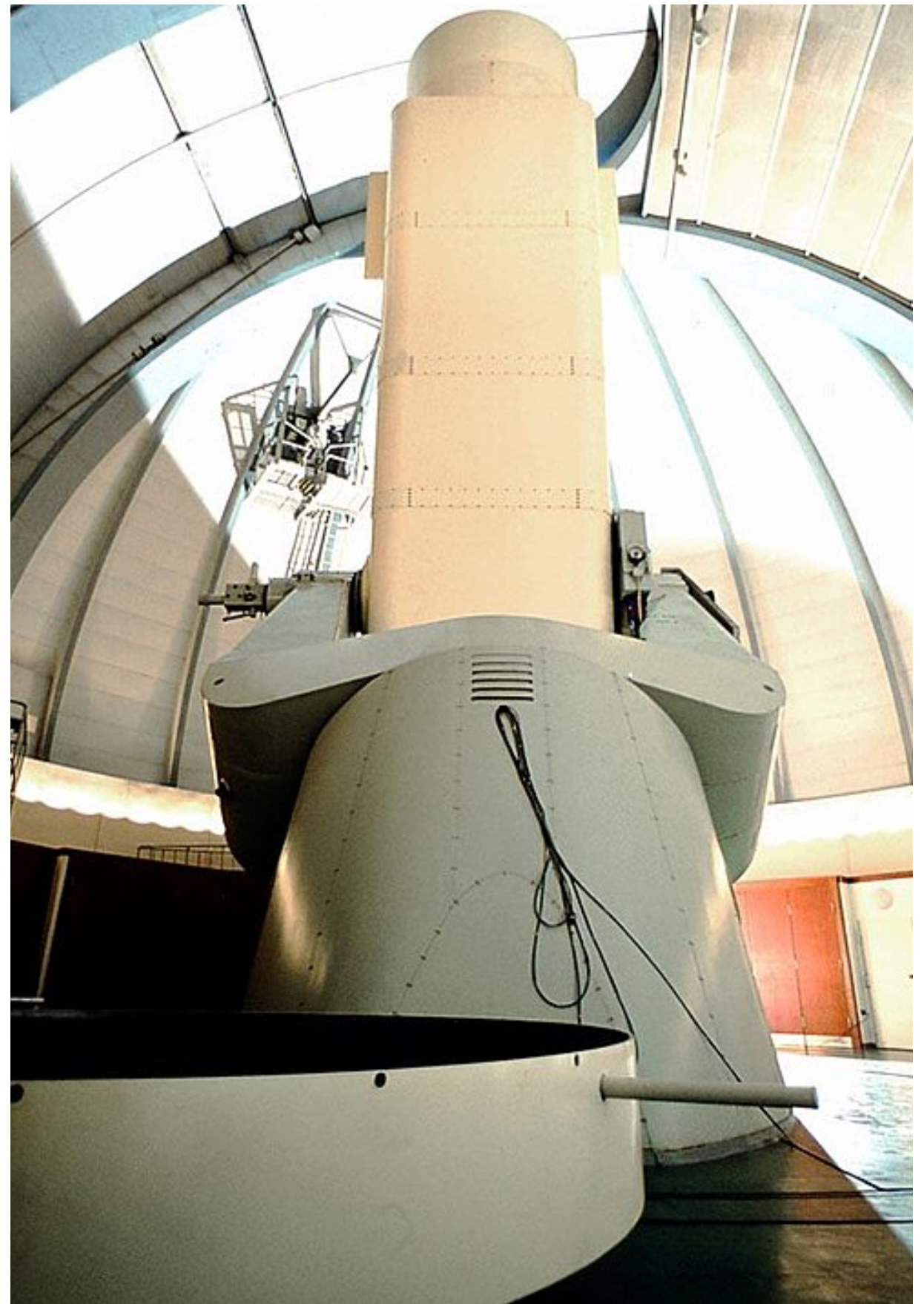
One problem...

- POSS I was taken in 1952
- Sputnik didn't launch until 1957
- We didn't *have* any artificial satellites in 1952



Optical distortion

- APPLAUSE archive from Hamburg Observatory
- A telescope with known distortion
- Transients found; same distortion!
- Therefore, real light - not plate artefacts
- <https://arxiv.org/abs/2603.20407>



Correlations

- Significant correlations found with:
 - Nuclear testing
 - UFO sightings
- And remember the deficit in shadow...



It's a mystery!

- Science at its best - they went looking for one thing, but found something else and followed the evidence.
- We tend to only look for things we want to find; What happens when we turn off the filters?