Pluto in Glory

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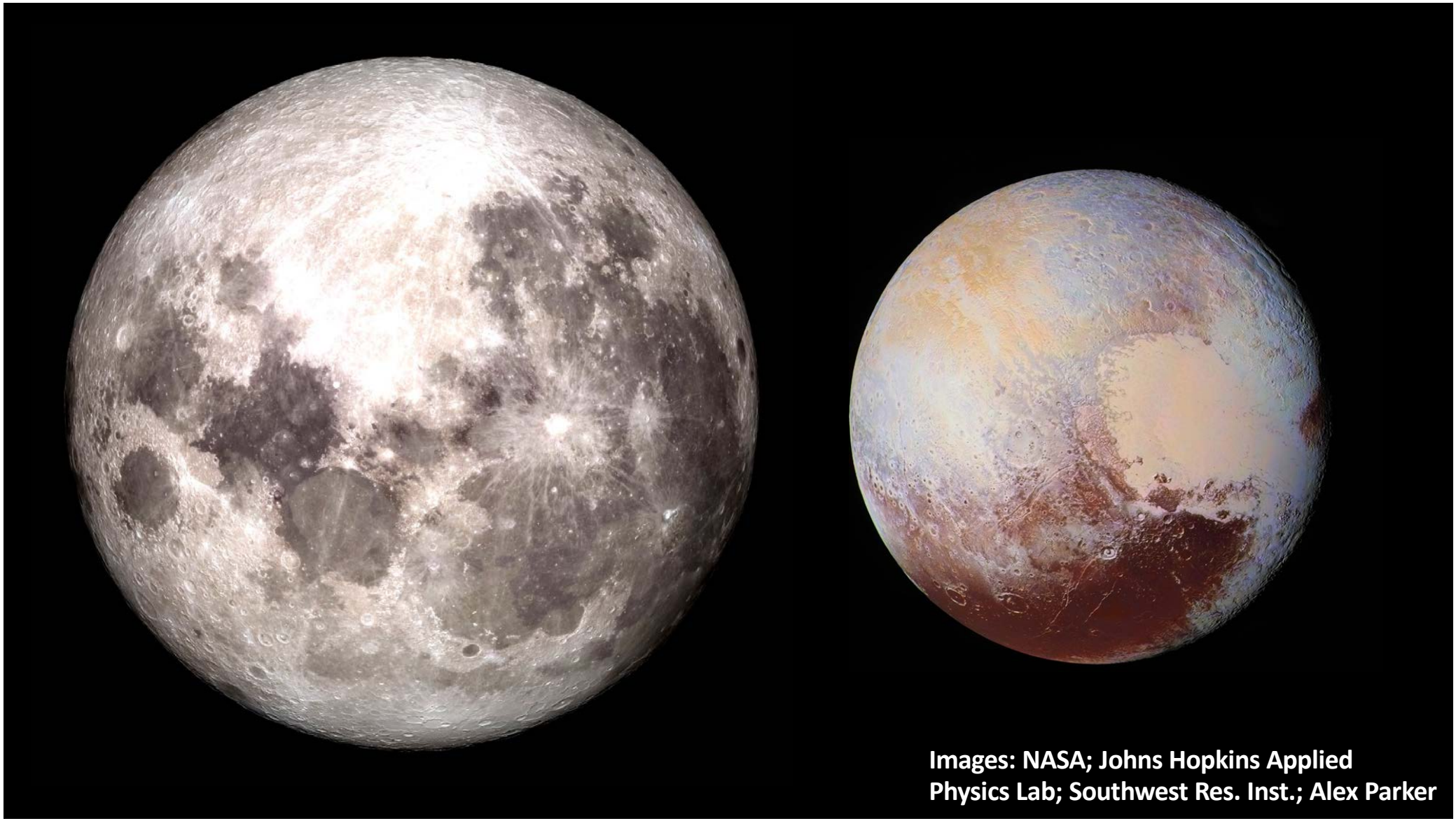
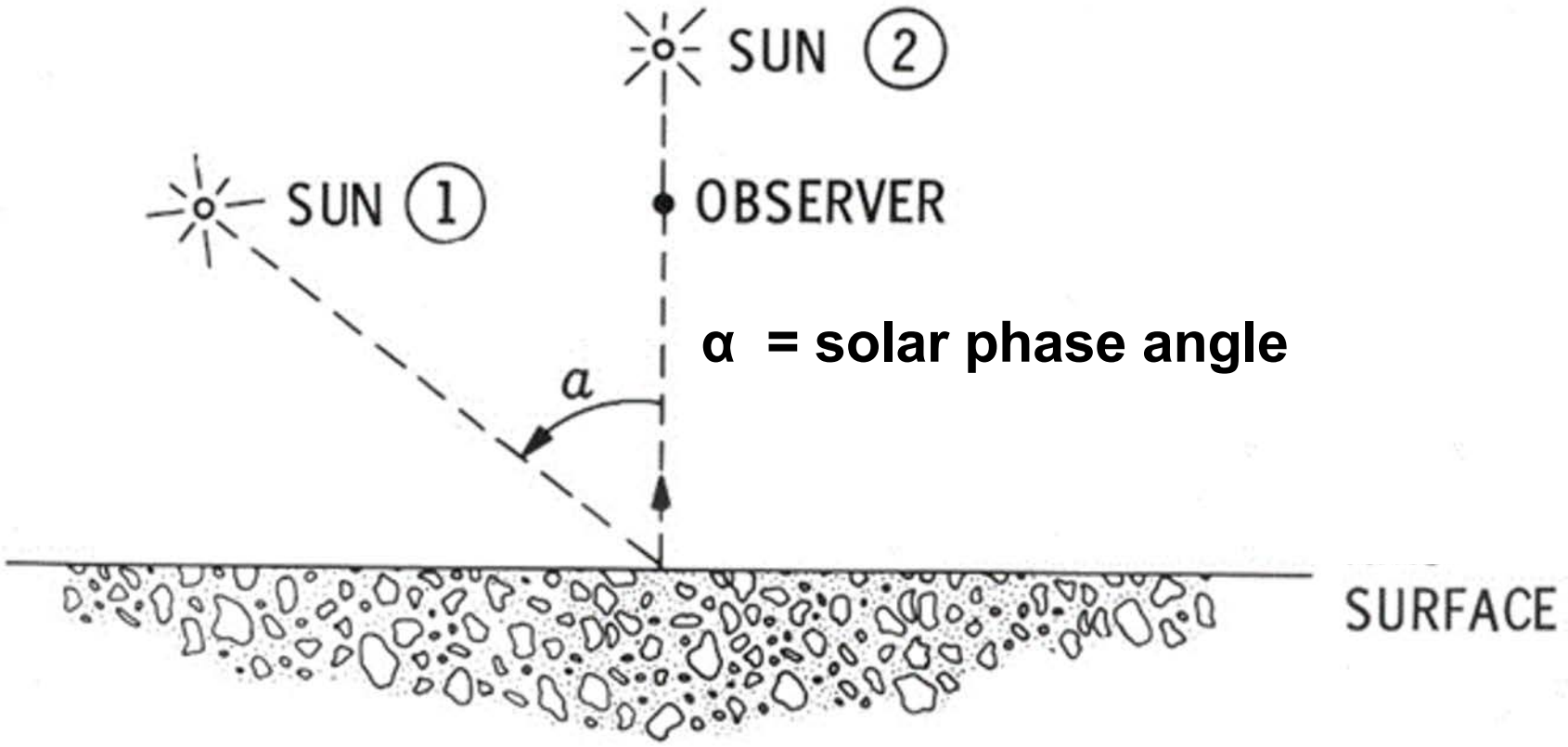
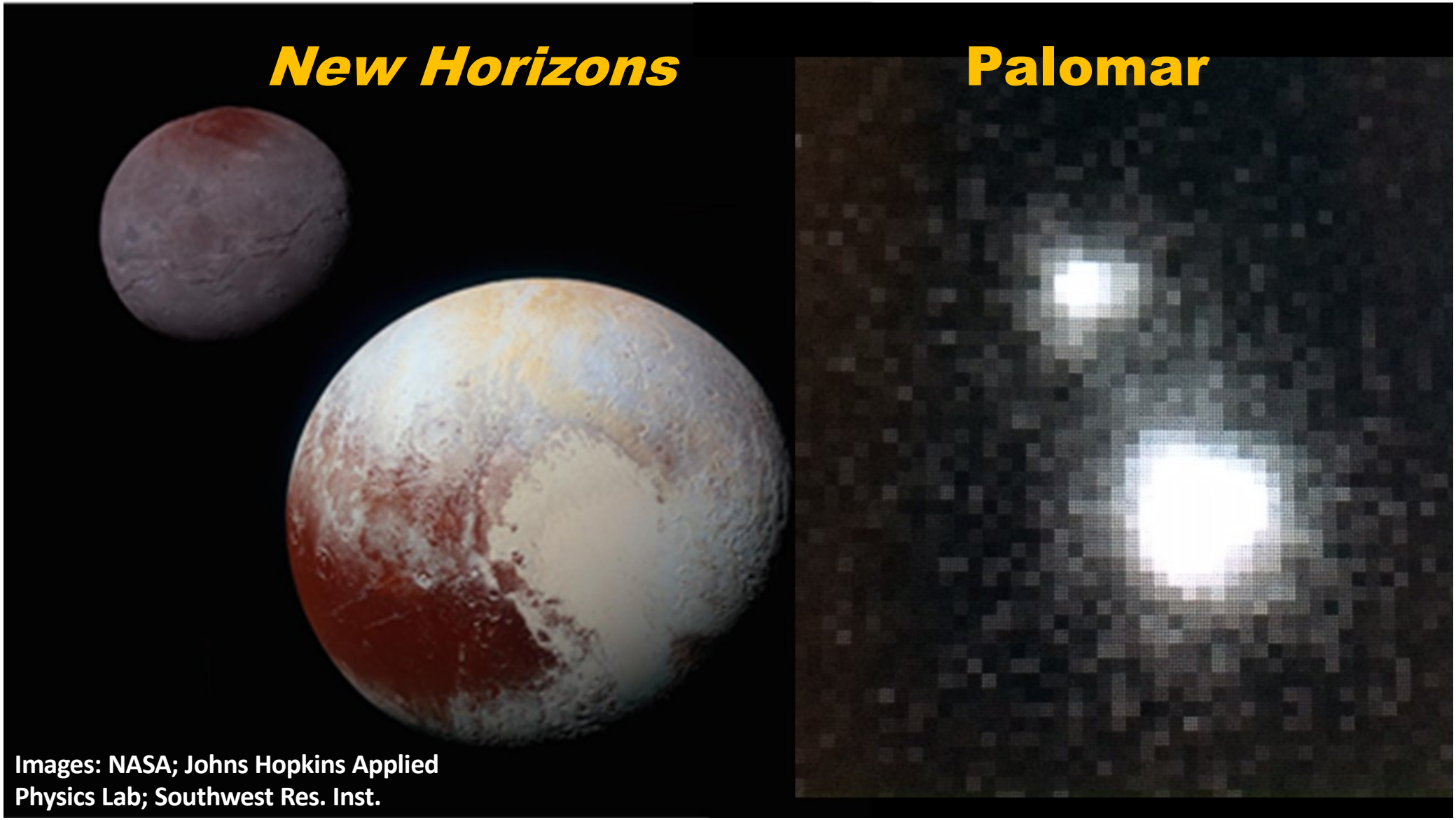

Images: NASA; Johns Hopkins Applied
Physics Lab; Southwest Res. Inst.; Alex Parker

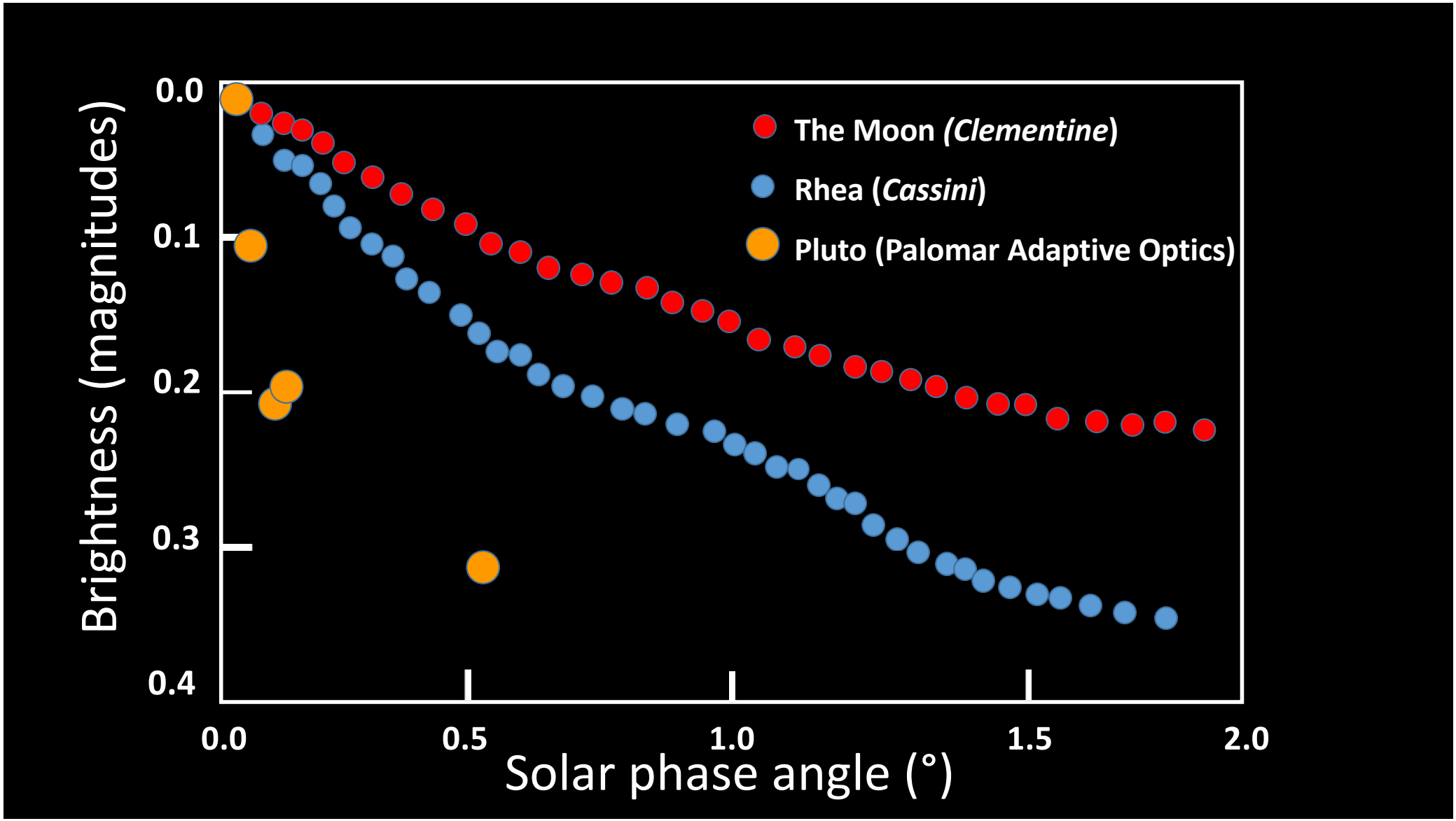
What causes an opposition surge?




NASA


Caltech


New Horizons
Palomar
Images: NASA; Johns Hopkins Applied Physics Lab; Southwest Res. Inst.


Brightness (magnitudes)
0.0
0.1
0.2
0.3
0.4
0.0
0.5
1.0
1.5
2.0
Solar phase angle (°)
The Moon (Clementine)
Rhea (Cassini)
Pluto (Palomar Adaptive Optics)

Conclusions

- Pluto exhibits a huge surge in brightness – about 30-35% in the last half-degree of solar phase angle. The small phase angles we observed (~0.01°) will not be visible for another 161 years.
- This opposition surge is greater than that of the Moon and other bodies so far studied.
- The effect may be due to an unusual surface structure, perhaps caused by ongoing volatile transport or deposition of haze particles from Pluto's atmosphere.

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