



# PHYSICS AND ASTRONOMY COLLOQUIUM

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**“Why the day is 24 hours long”**

## Abstract

“Geologic data show that the number of days per month decreased over the last 1,300 Myr, while the length of day increased. In contrast, the number of days per month increased between 2,800 Mya and 1,300 Mya, while the length of day was roughly constant, at about 19 hours, consistent with a balance between the Lunar tidal torque and the resonant solar thermal atmospheric torque. The data also show that the angular momentum of the Earth-Moon system (not including the orbital angular momentum of Earth) increased by several percent over the epoch when the day length was constant. We use the data to infer the mean surface temperature  $T$  as a function of time; a resonant atmospheric period of 19.5 hours corresponds to  $T$  of roughly 50 C. Similarly high temperatures are reached for plausible atmospheric pressures and compositions, despite the lower Solar flux at that epoch.”

Wednesday, March 31, 2021

3:30 p.m.

via Zoom: <https://uvic.zoom.us/j/81377096640>