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2013 LECTURE TOUR



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Earth seen by Apollo 17

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A strange beeping noise...

- Film clip 1: <http://youtu.be/wlGc3SLYLes>



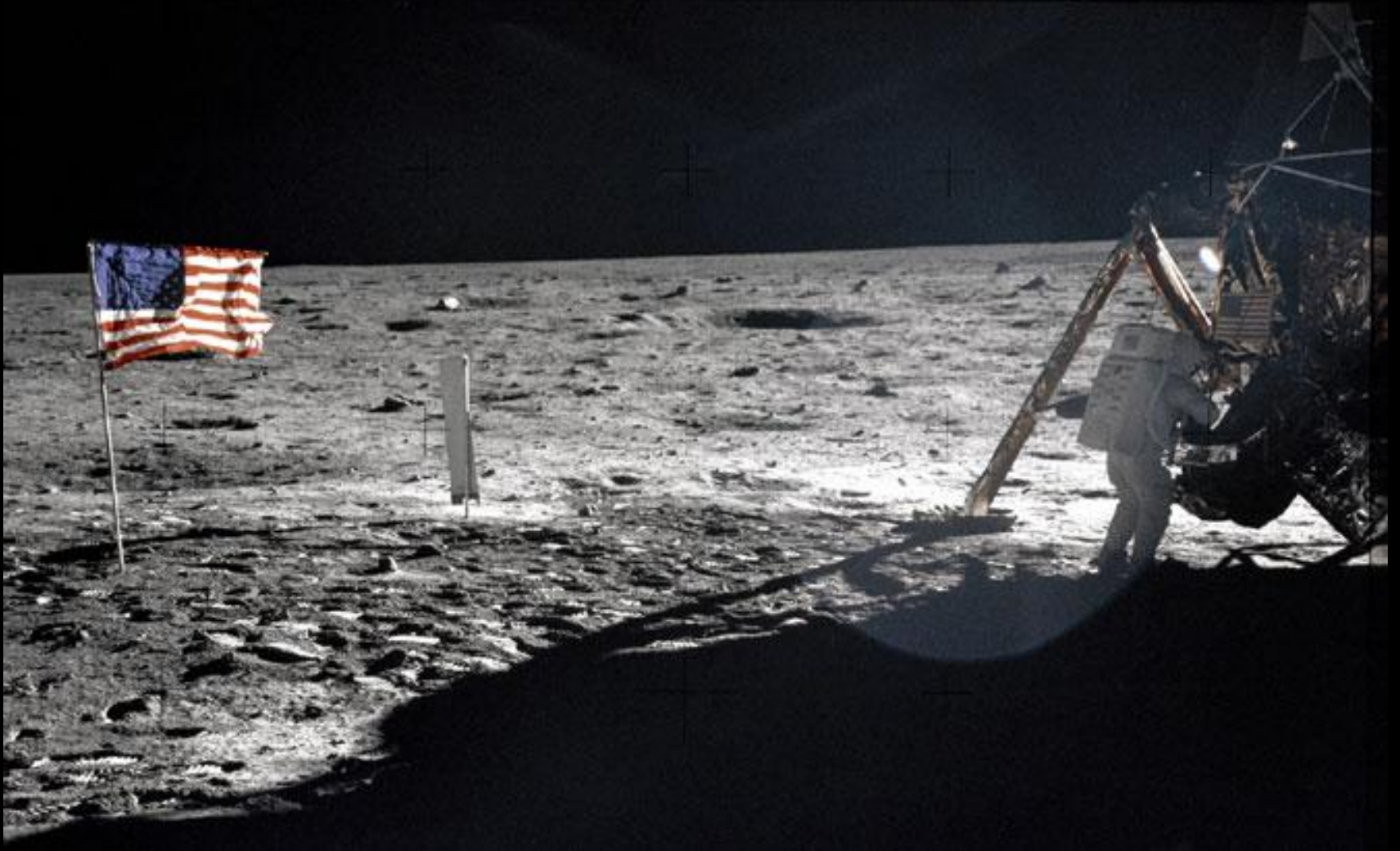
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JFK Moon Speech

- Film clip 2: <http://youtu.be/jb-Rie8WbBE>



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Earth from the ISS

- Film clip 3: http://youtu.be/1kL6exEp_4s

$$\text{Work done} = \text{Weight} \times \text{Distance}$$

(joule, J) (newton, N) (metres, m)

$$\text{Weight} = \text{Mass} \times \text{Field strength}, g$$

(newton, N) (kilogram, kg) (Newton per kilogram, N/Kg)

$$\text{Weight} = 0.06 \times 10 = 0.6 \text{ N}$$

$$\text{Work done} = \text{Weight} \times \text{Distance}$$

(joule, J) (newton, N) (metres, m)

$$\begin{aligned}\text{Work done} &= 0.6 \times 400\,000 \\ &= 240\,000 \text{ J}\end{aligned}$$



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$1.3 \times 10^{12} \text{ J} = 1300000000000 \text{ J}$

$$\text{Momentum} = \text{Mass} \times \text{Velocity}$$

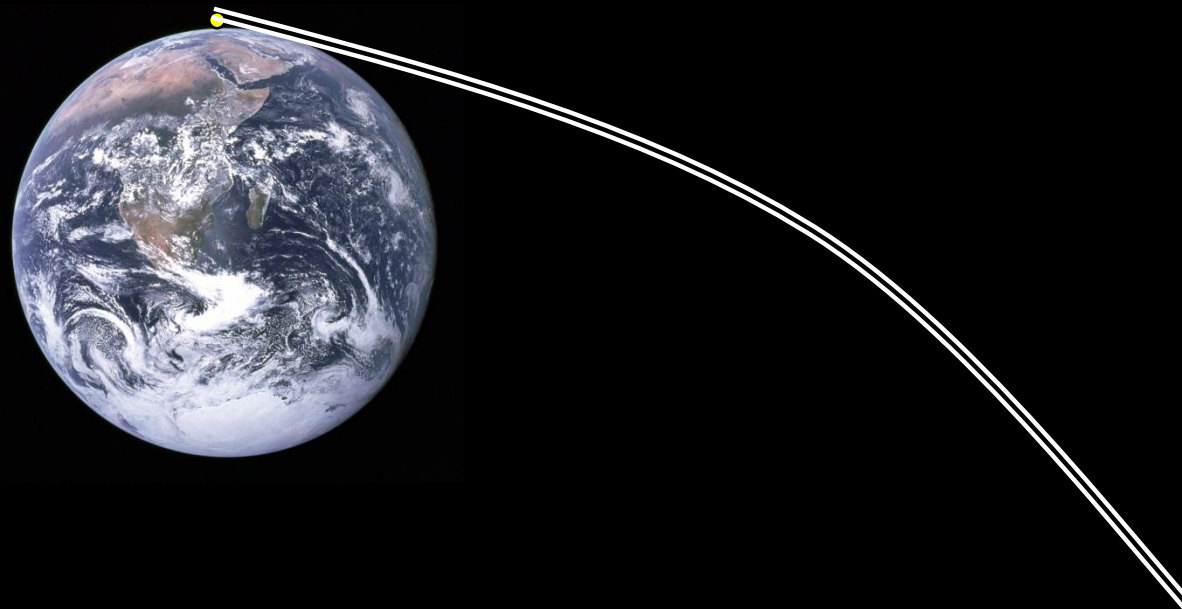
(kg m/s) (kilogram, kg) (metres per second, m/s)

Conservation of momentum

- Film clip 4: <http://www.our-space.org/materials/states-of-matter/momentum-in-space>



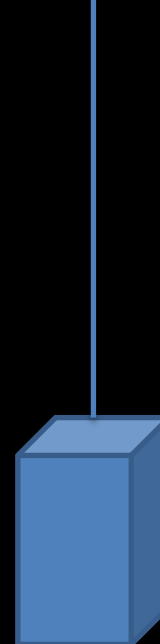
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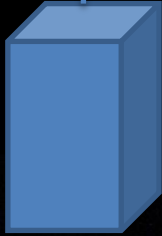
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Space Jump

- Film clip 5: <http://youtu.be/7Ydx6sCzJ74>



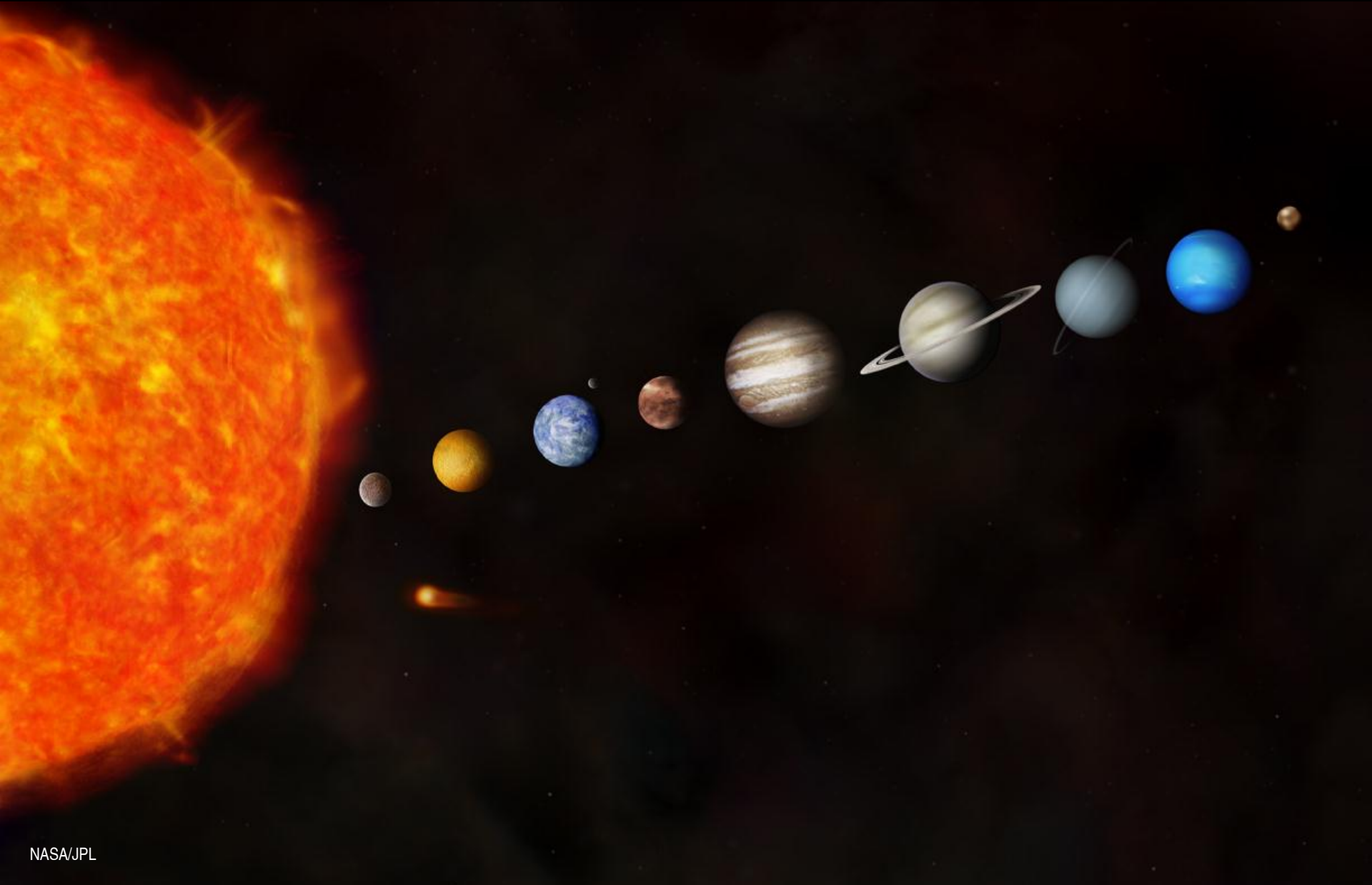
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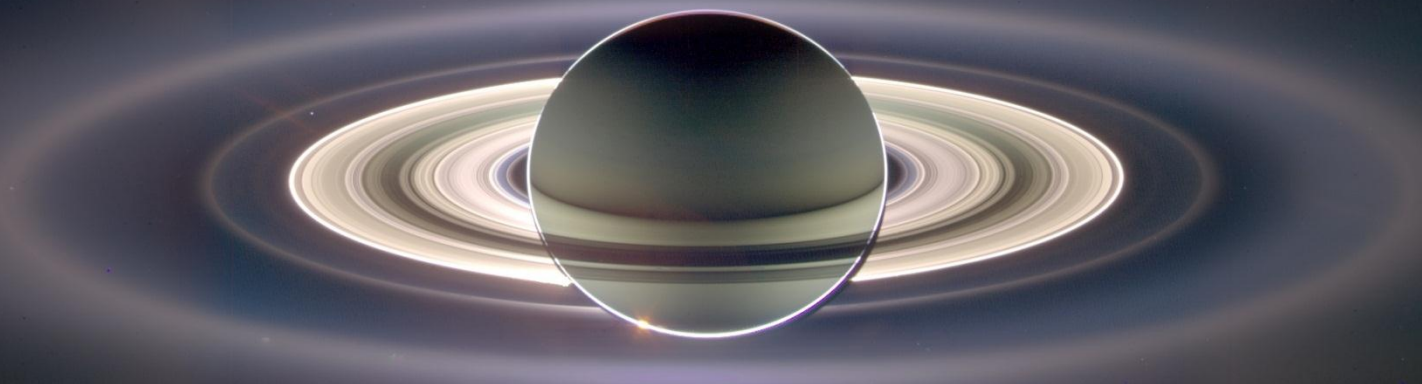
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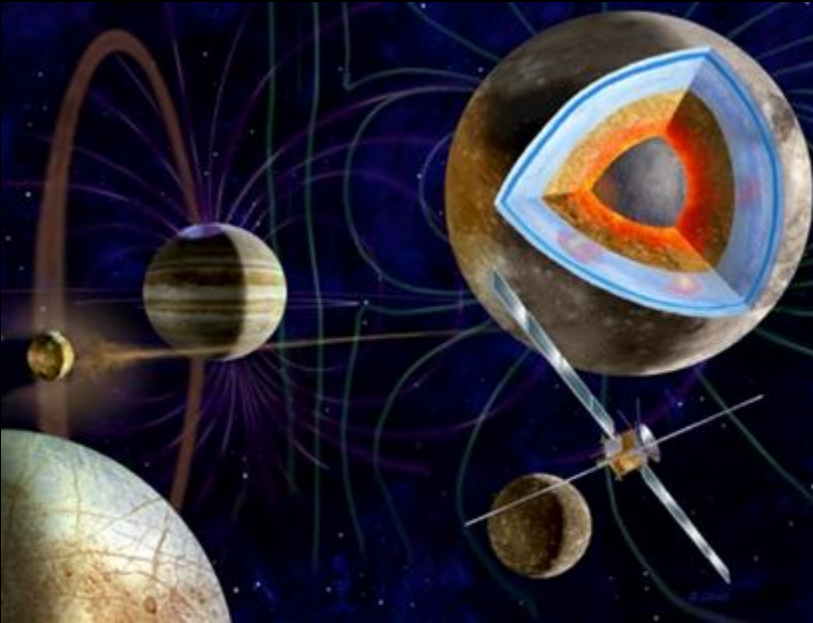
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JUICE



Size	Not yet built
Signal time	30 minutes
Target	Jupiter and its moons
Mission duration	Launch 2022 Arrive 2030
Distance from us	30 light mintes



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