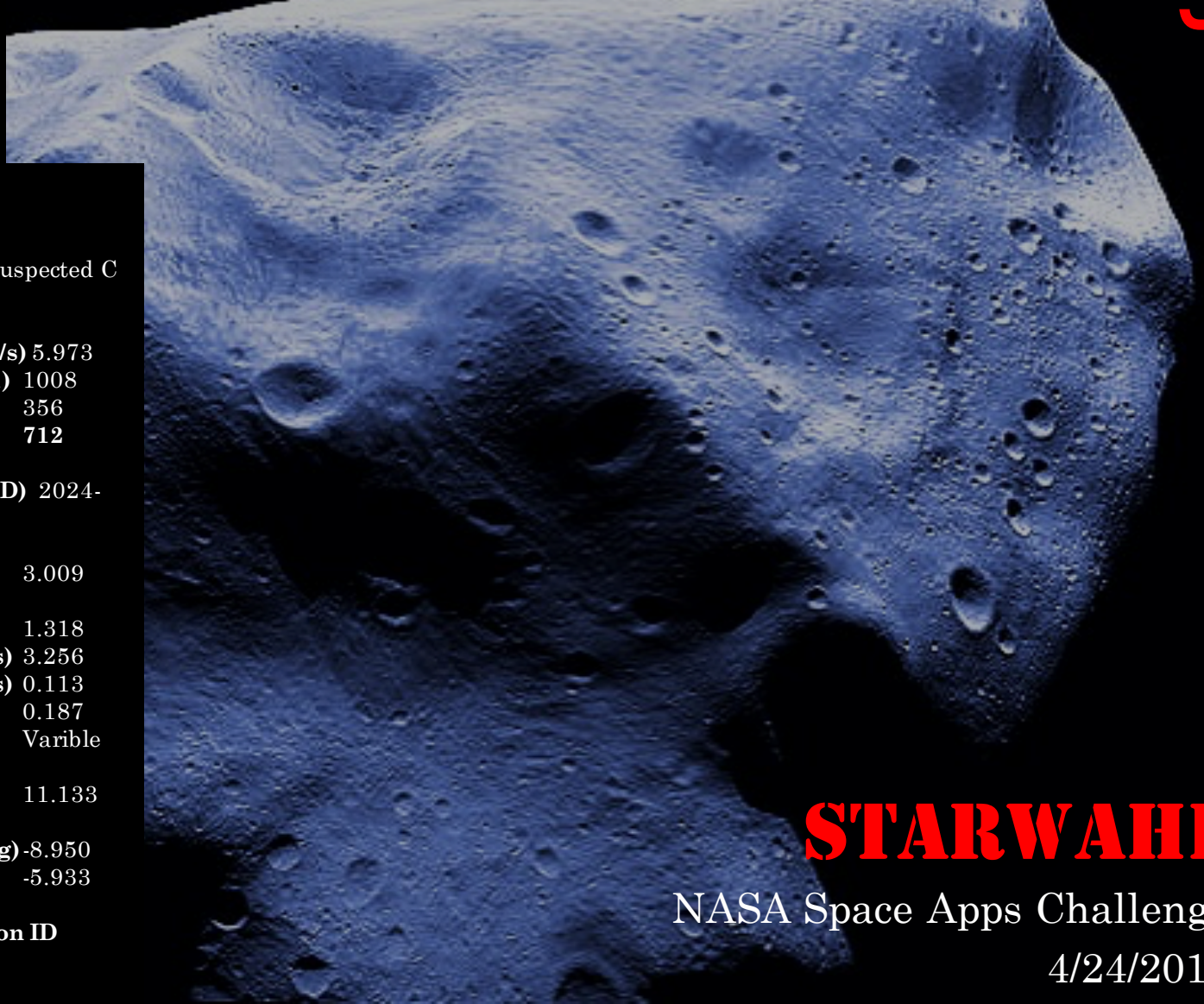


# NE Asteroid Mining

**NEO 2000 SG 344**



Mass  $7.1 \times 10^7$   
Diameter 37 meter  
Class Unknown Suspected C

Total Mission delta-V (km/s) 5.973  
Total Mission Duration (d) 1008  
Outbound Flight Time (d) 356  
Inbound Flight Time (d) 712

Launch date (YYYY-MM-DD) 2024-04-22

$C_3$  (km<sup>2</sup>/s<sup>2</sup>) 1.737 3.009

Departure  $V_{\infty}$  (km/s) 1.318  
Earth Departure dV (km/s) 3.256  
dV to Arrive at NEA (km/s) 0.113  
dV to Depart NEA (km/s) 0.187  
Earth return dV (km/s) Variable

Entry Speed (km/s) 11.133

Departure Declination (deg) -8.950  
Return Declination (deg) -5.933

NHATS Trajectory Solution ID  
890465

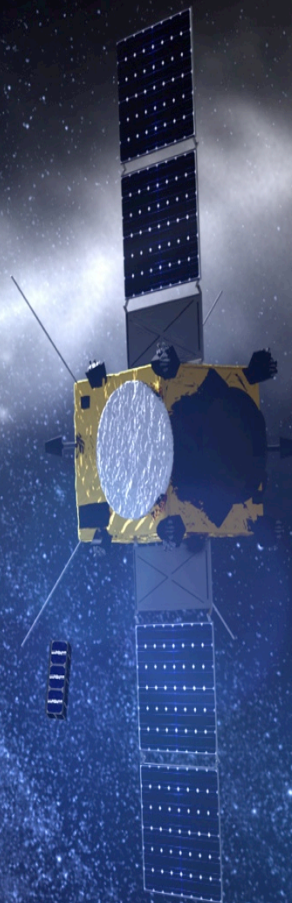
**STARWAHL**

NASA Space Apps Challenge

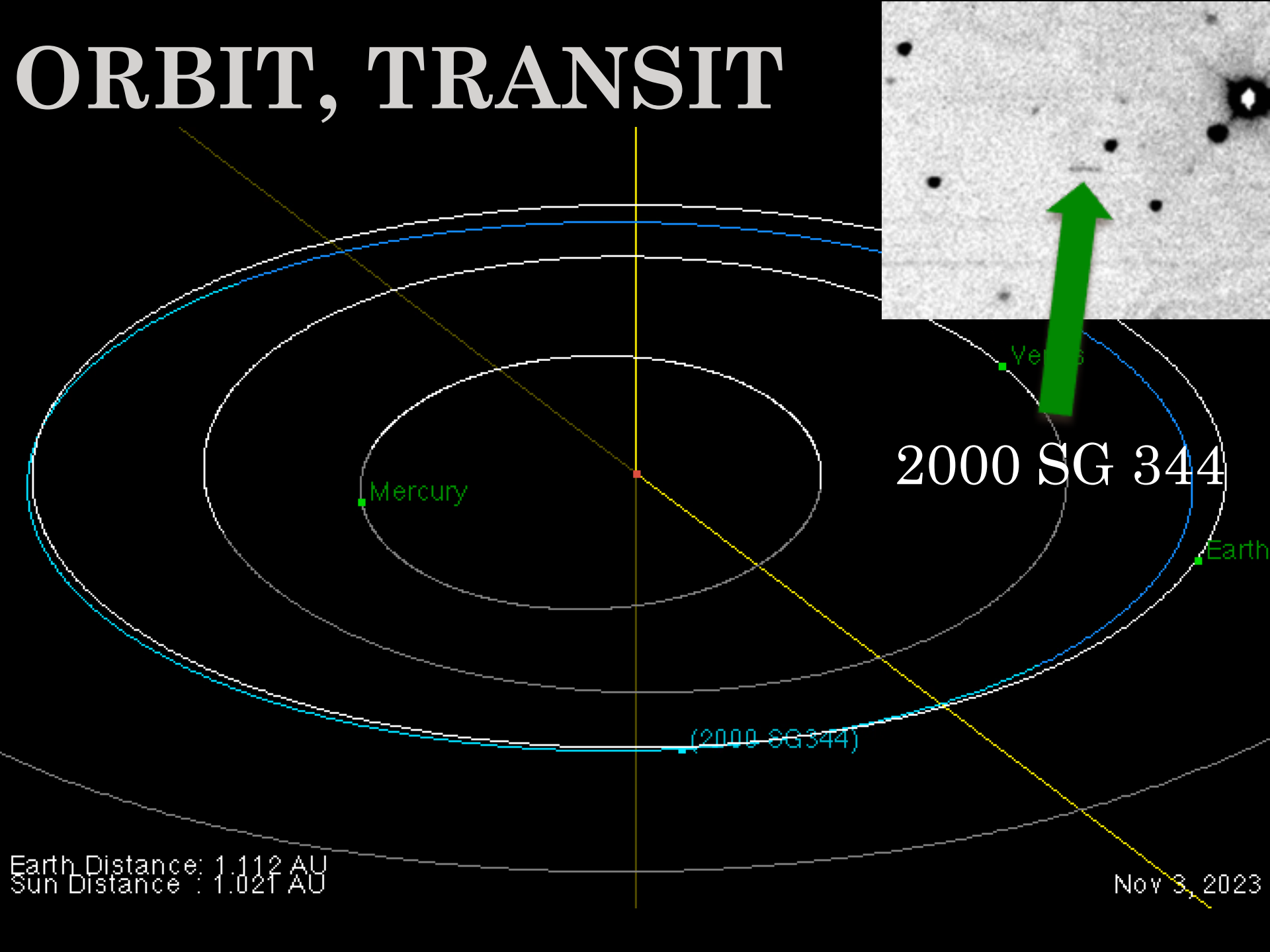
4/24/2016



# Mother ship

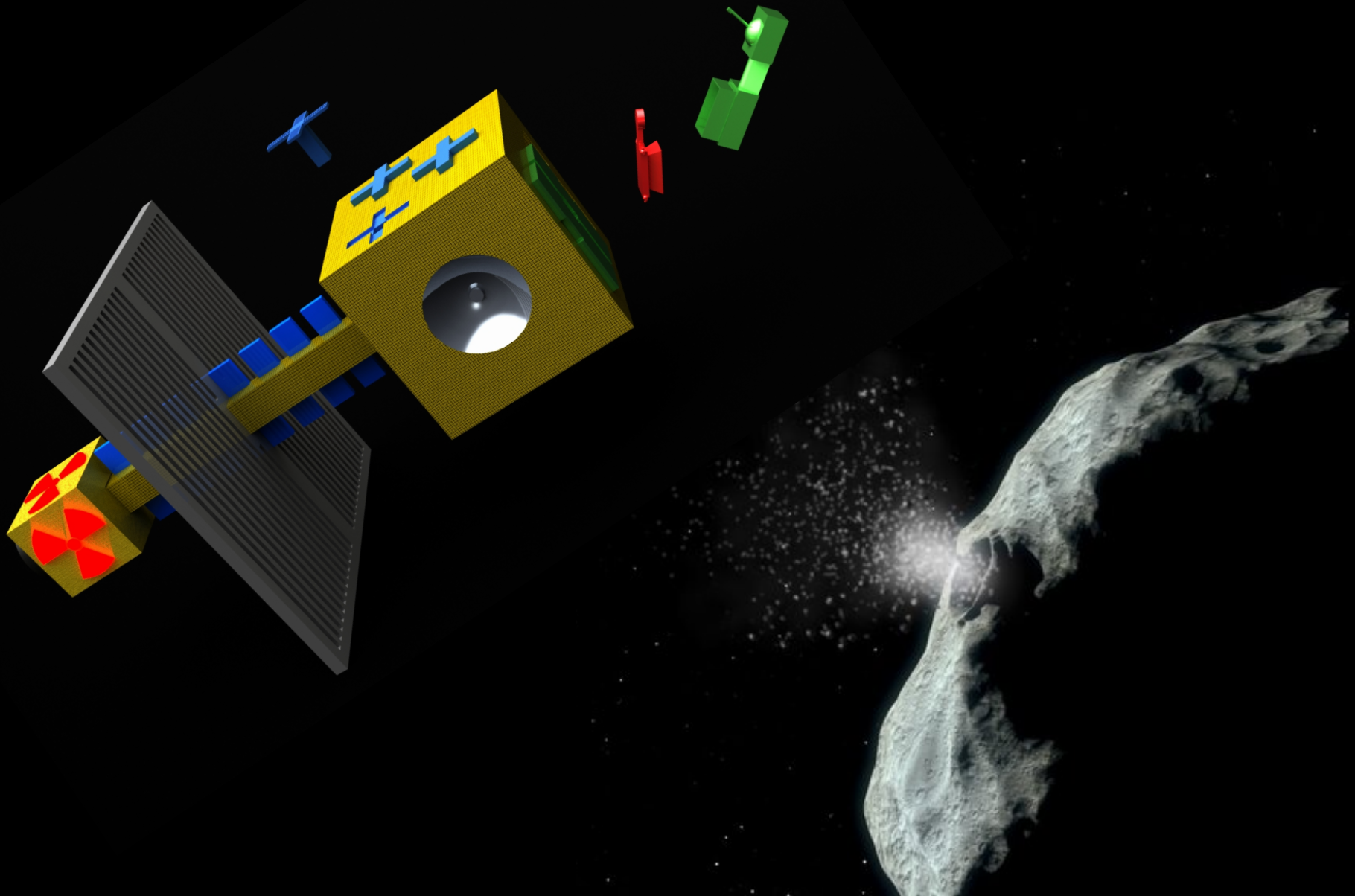


# ORBIT, TRANSIT

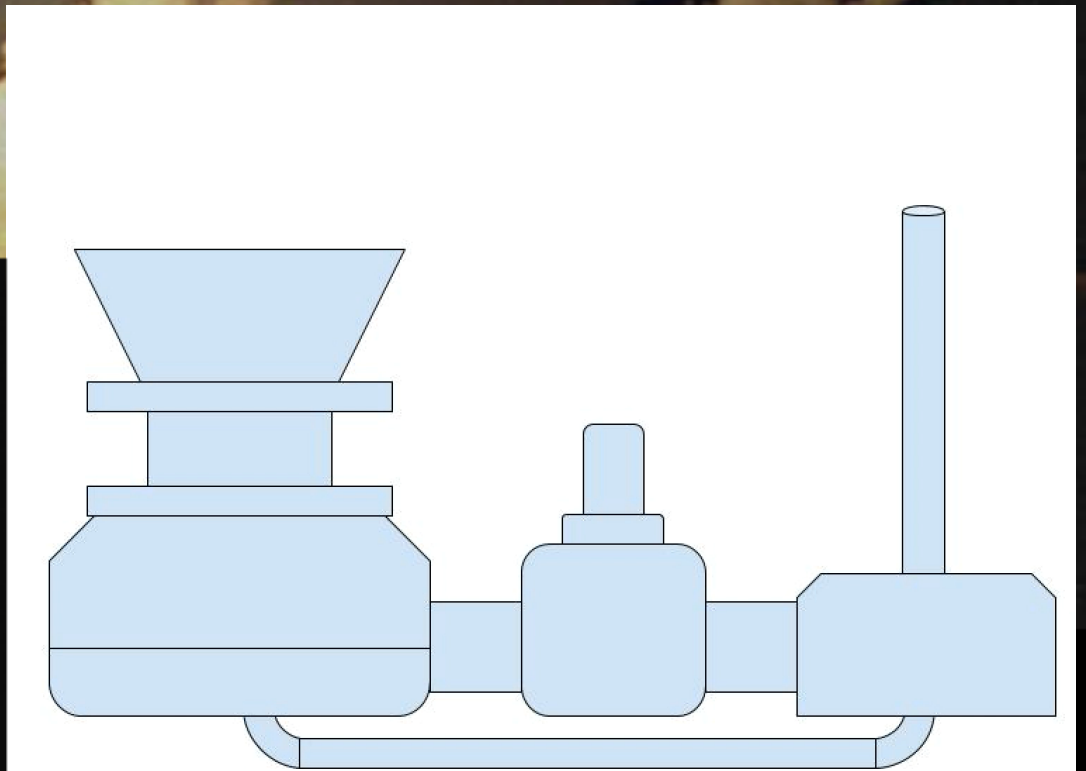
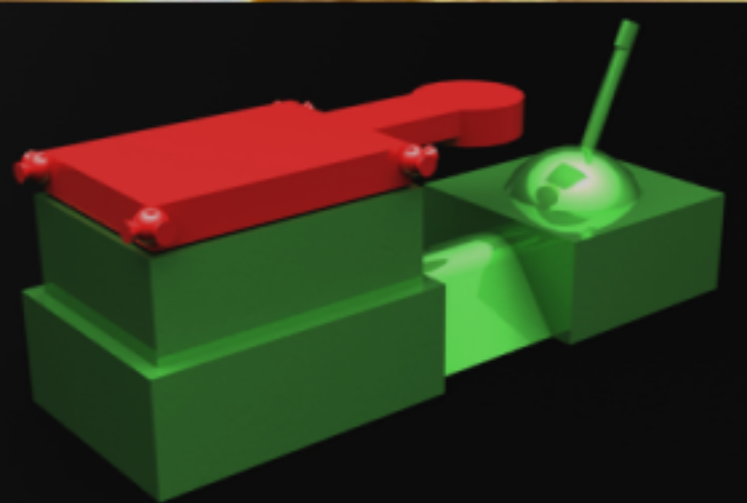
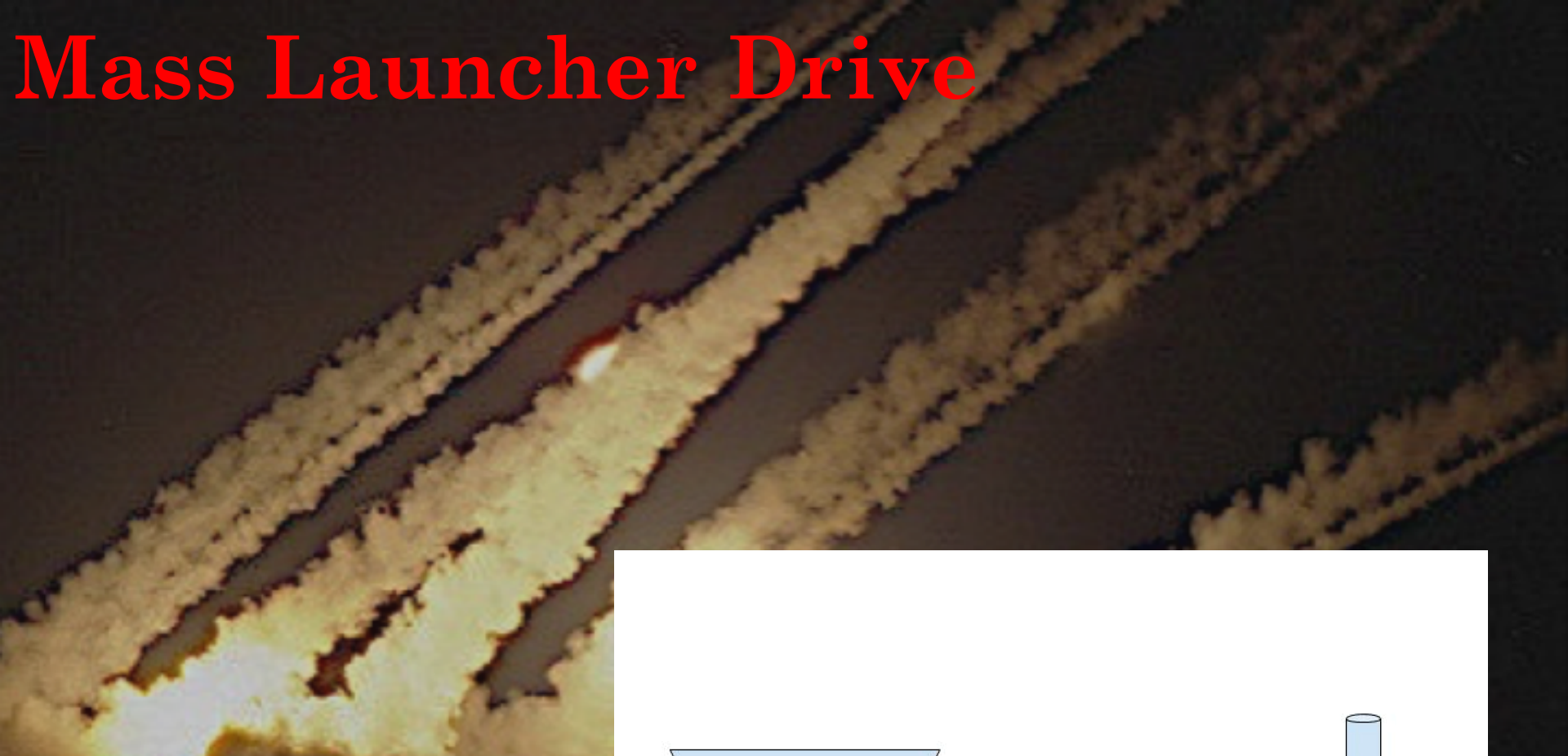




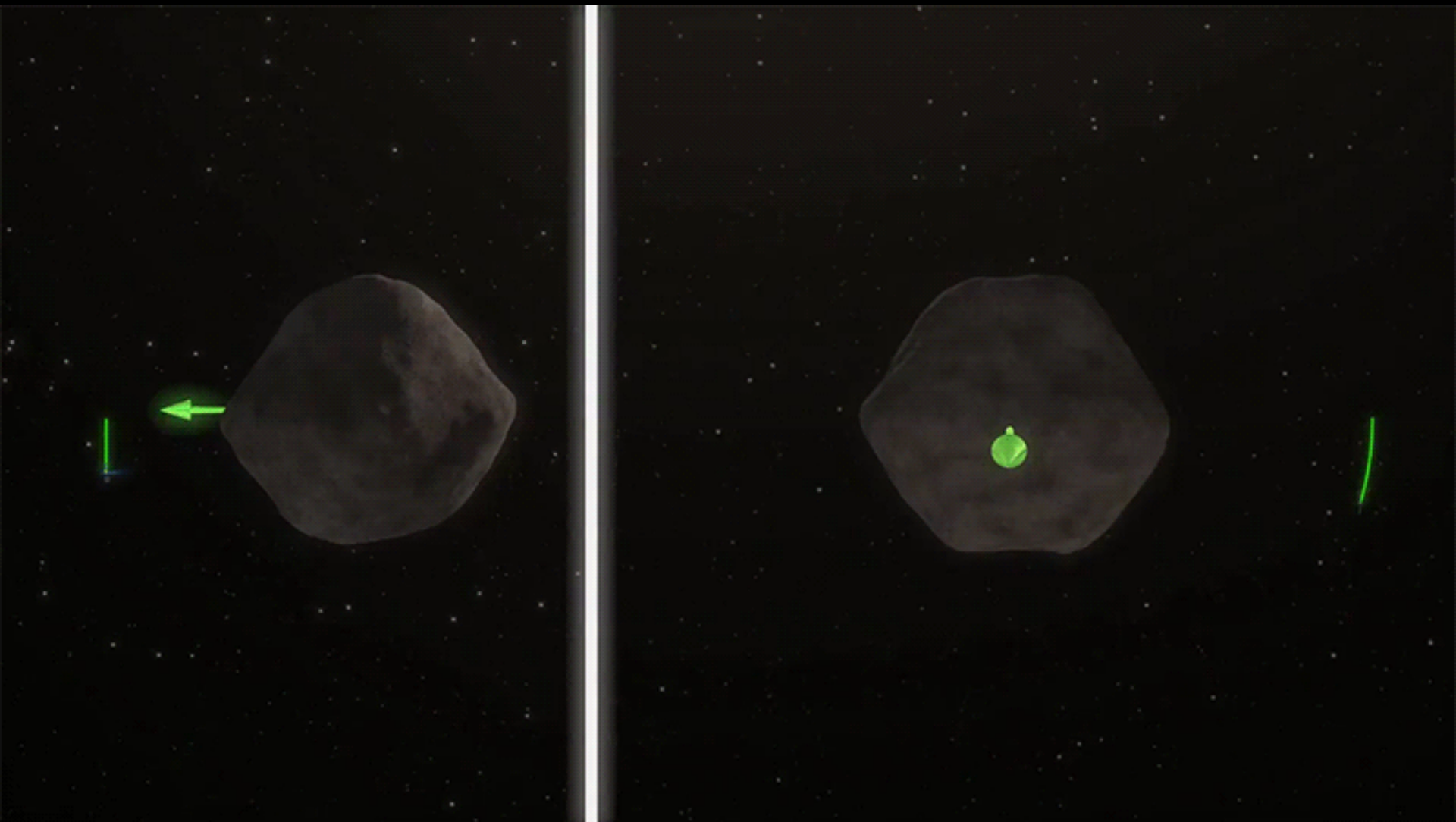
# Impactor / Drones



# Mass Launcher Drive



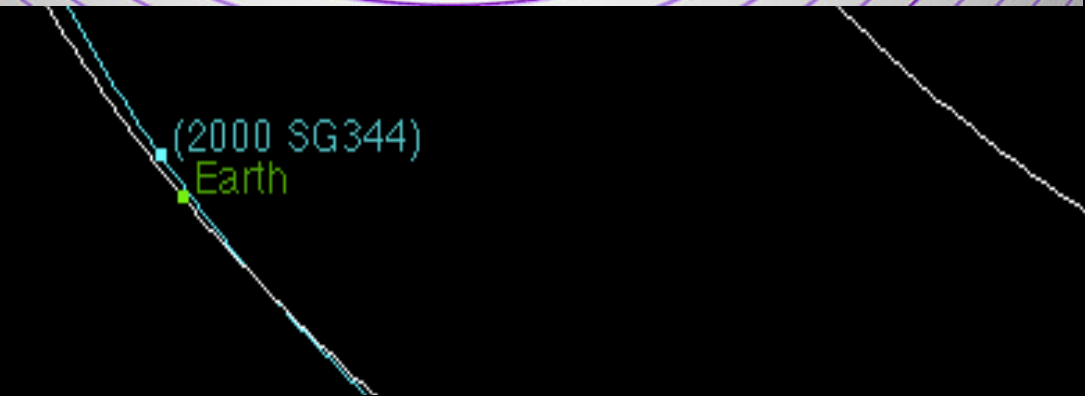
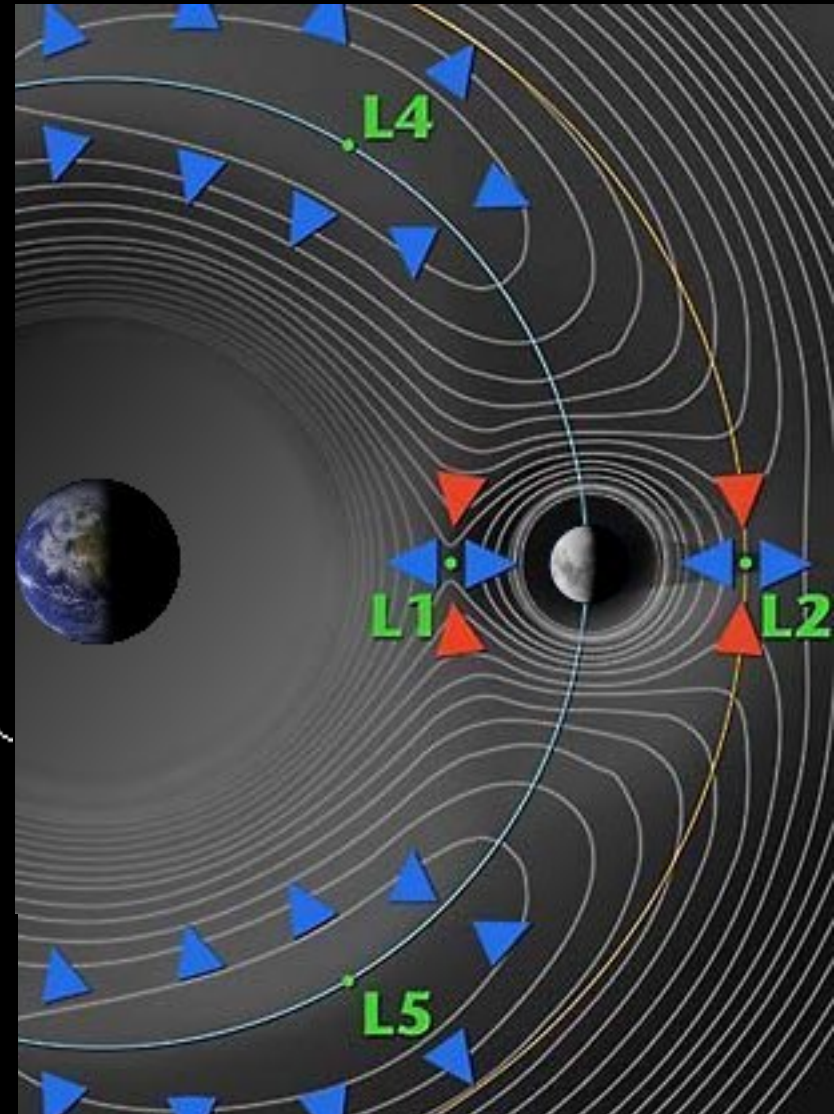
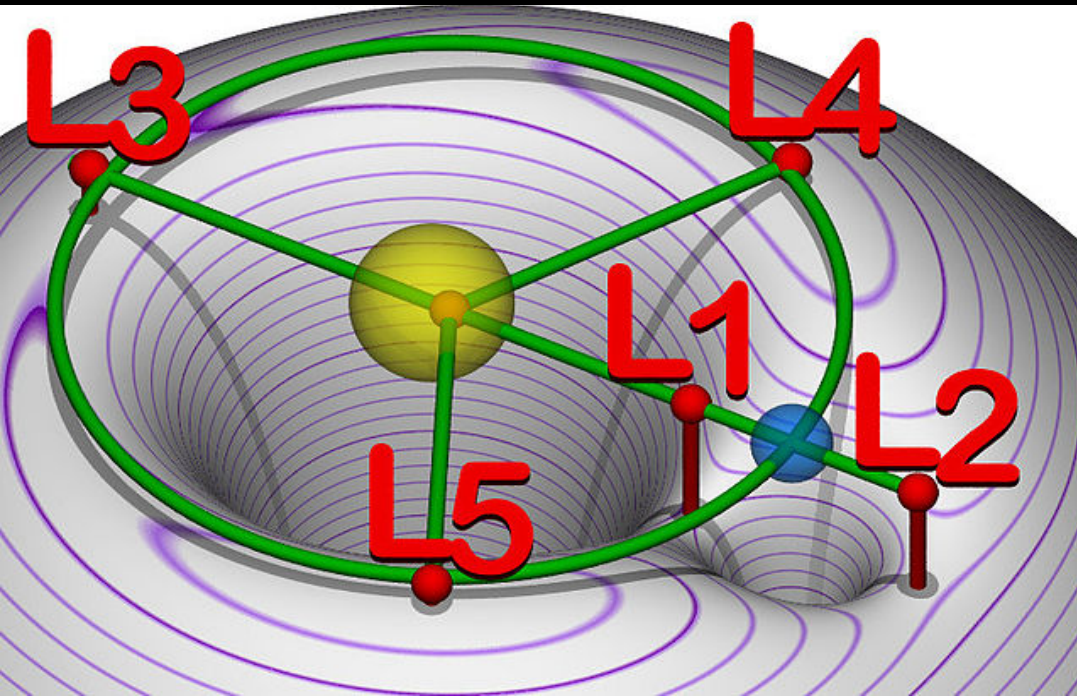
# Gravity Tractor



Not a John Deer



# Return to L1



Closest approach May 7, 2028  
Distance from Earth .0259 AU

# Research and resources

<http://www.nasa.gov/content/asteroid-redirect-mission-planetary-defense-demonstration>

<http://creativecommons.org/licenses/by-sa/3.0/>

[http://wildernessastronomy.com/wp-content/uploads/2012/05/asteroid\\_21\\_lutetia\\_nasa\\_observing\\_binoculars.jpg](http://wildernessastronomy.com/wp-content/uploads/2012/05/asteroid_21_lutetia_nasa_observing_binoculars.jpg)

<http://neo.jpl.nasa.gov/cgi-bin/nhats>

<http://neo.jpl.nasa.gov/cgi-bin/nhats?sstr=2000%20SG344&dv=6&dur=360&stay=8&launch=2015-2040>

<http://neo.jpl.nasa.gov/risk/2000sg344.html>

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<http://www.space.com/30213-asteroid-mining-planetary-resources-2025.html#sthash.Ez1nmiYz.dpuf>

**EASILY RETRIEVABLE OBJECTS AMONG THE NEO POPULATION** D. García Yárnoz,<sup>\*</sup> J. P. Sánchez,<sup>†</sup> and C. R. McInnes<sup>‡</sup> DOI:

*10.1007/s10569-013-9495-6. Pre-print proof-reading copy. The final publication is available at: <http://link.springer.com/article/10.1007/s10569-013-9495-6> Celest Mech Dyn Astr (2013) 116:367–388*

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<https://www.youtube.com/watch?v=0KUdyBm6bcY>

**WRANGLER: Capture and De-Spin of Asteroids and Space Debris** <http://www.nasa.gov/content/wrangler-capture-and-de-spin-of-asteroids-and-space-debris/#.Vxy8iKvUCAZ>

Resource Prospector

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Glass Beads, Meteorite Fragments Hold Secret to Working on Asteroids

<http://www.nasa.gov/feature/glass-beads-meteorite-fragments-hold-secret-to-working-on-asteroids>

**Microwave assisted hard rock cutting**

**US 5003144 A**

12 August 2015 Forget fracking, microwave zaps could clean up the oil business

<https://www.newscientist.com/article/mg22730340-400-forget-fracking-microwave-zaps-could-clean-up-the-oil-business/>

Tuesday, April 29, 2008 Microwave rock drill

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# STARWAHL

## NEAR EARTH ASTEROID MINING

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