

Code samples: https://gist.github.com/AnnaGerber/e5f897b745e5f96da463

Rover Build instructions: <a href="https://t.co/x3]8ml0ddU</a>

to avoid obstacles

autonomously, using the ultrasonic sensor

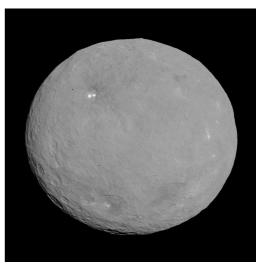
- ultrasonic sensor

  Program your bot to drive around an area
- Beep when an obstacle is detected using the
  - Use buttons to toggle what is displayed
- Display the light reading on the digit display
- Here are some ideas for programming your bot:
  Display the temperature on the digit display

Your challenge is to build a NodeRover to explore the asteroid Ceres 1.

Welcome to International ModeBots day 2015!

## Ceres (1) Rover



The Cererian surface is relatively warm. The maximum temperature with the Sun overhead was estimated from measurements to be 235 K (about -38 °C, -36 °F) on 5 May 1991. Ice is unstable at this temperature.

## omets.

Ceres appears to be differentiated into a rocky core and icy mantle, and may harbor a remnant internal ocean of liquid water under the layer of ice. The surface is probably a mixture of water carbonates and clay. In January 2014, emissions of water vapor were detected from several regions of Ceres. This was somewhat unexpected, because large bodies in the asteroid belt do not typically emit vapor, a hallmark of

Ceres (minor-planet designation: 1 Ceres) is the largest object in the asteroid belt, which lies between the orbits of Mars and Jupiter. Its diameter is approximately 963 kilometers (598 miles), making it the largest of the minor planets within the orbit of Neptune.

Mean radius Equatorial radius 481.5 km<sup>[6]</sup> Polar radius 445.5 km<sup>6</sup> 2770000 km<sup>2[7]</sup> Surface area 421000000 km<sup>3[7]</sup> 9.39×10<sup>20</sup> kg<sup>15</sup> 0.00015 <u>Earths</u> 0.0128 <u>Moons</u> 2.17 g/cm<sup>3[7]</sup> Mean density 0.29 <u>m/s<sup>2[7]</sup></u> 0.029 <u>g</u> Surface gravity 0.51 km/s<sup>[7]</sup> Escape velocity Sidereal rotation 0.3781 d 9.074170±0.000002 h Equatorial 92.61 m/s<sup>[7]</sup> rotation velocity ≈3°<sup>[9]</sup> **Axial tilt** 19<sup>h</sup> 24<sup>m</sup> North poleright ascension North poledeclination 59° 91 0.090±0.0033 (V-band ≈ 168 K<sup>[14]</sup> 235 K<sup>[15]</sup> Kelvin  $C^{[11]}$ Spectral type 6.64<sup>[12]</sup> to 9.34<sup>[13]</sup> Apparent magnitude 3.36±0.02<sup>[10]</sup> magnitude (H) 0.854" to 0.339"

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