

XIX A. Planetary Data and Classical Newton's Calculation of Planetary Velocity

Read Planetary Data (MDD) and Compare to Calculated Velocity from Newton's Equation, vss

<https://nssdc.gsfc.nasa.gov/planetary/factsheet/>

$MDD := READPRN("Planets Mass Dist Density.txt")$ $MDD := MDD^T$

MERCURY VENUS EARTH MARS JUPITER SATURN URANUS NEPTUNE PLUTO

Mass Density Gravity EscapeVel Period Day Distance Perih, Aph, OrbPeriod OrbVelocity

$Mass := MDD^{(0)}$ $Dist := MDD^{(7)}$ $Vel_{Data} := MDD^{(11)}$ $v_{Earth} := Vel_{Data}_2$

Analytic Estimate: Newton's Model Equation for Velocity vs. Distance, d

$M_{\odot} := 1.98 \cdot 10^{30} \cdot kg$ $v_{Newton}(d) := \sqrt{G \cdot \frac{M_{\odot}}{d \cdot 10^6 \cdot km} \cdot \frac{1}{s}}$ $d_{Earth} := Dist_2$
 $v_{Newton}(6000) = 4.693$

Velocity vs Distance Curve, Falls Off Rapidly with Distance, is What is Expected for Galaxy Rotational Velocity

$d := 0, 10.. 6000$

Note Excellent Agreement Between Planetary Velocity Data and Newton's Prediction

Solar System (Planets) Rotational Velocity Curve: Data vs. Newton's Velocity Equation

