

# The first data scientist

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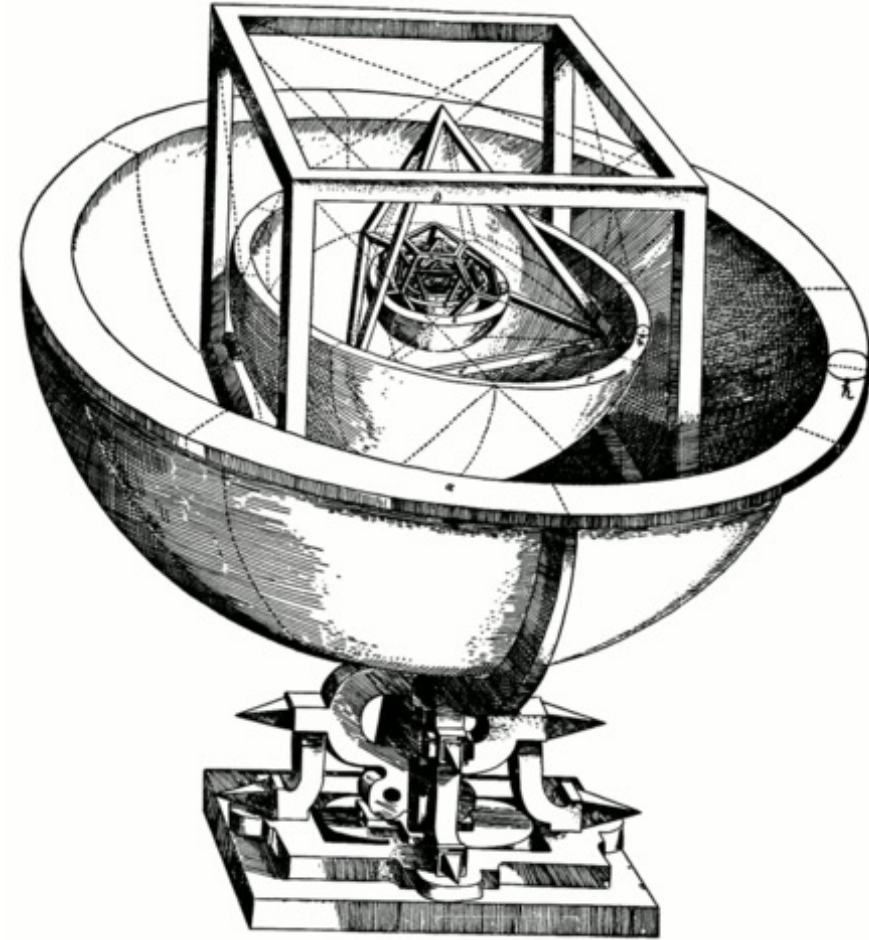
DS2000: Programming with Data



# Johannes Kepler



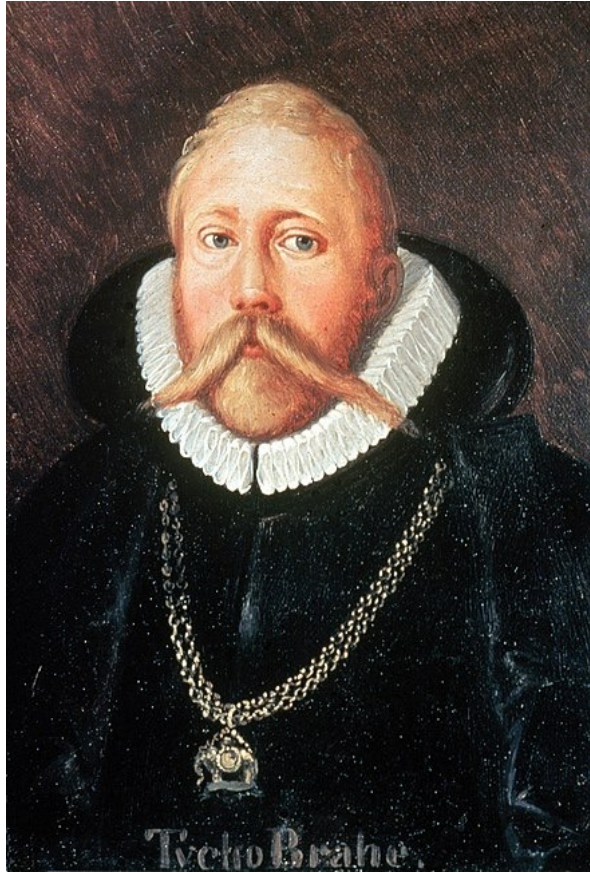
Johannes Kepler  
1571 - 1630



*Mysterium Cosmographicum (1596)*



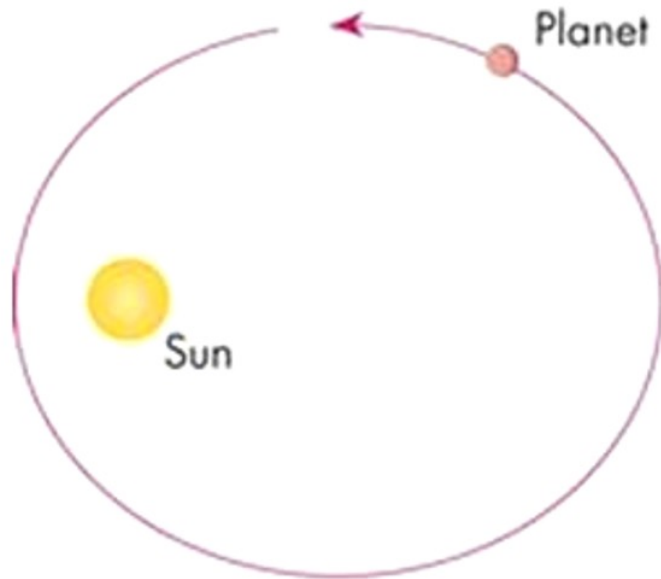
# Collaboration with Tycho Brahe



Tycho Brahe  
1546-1601

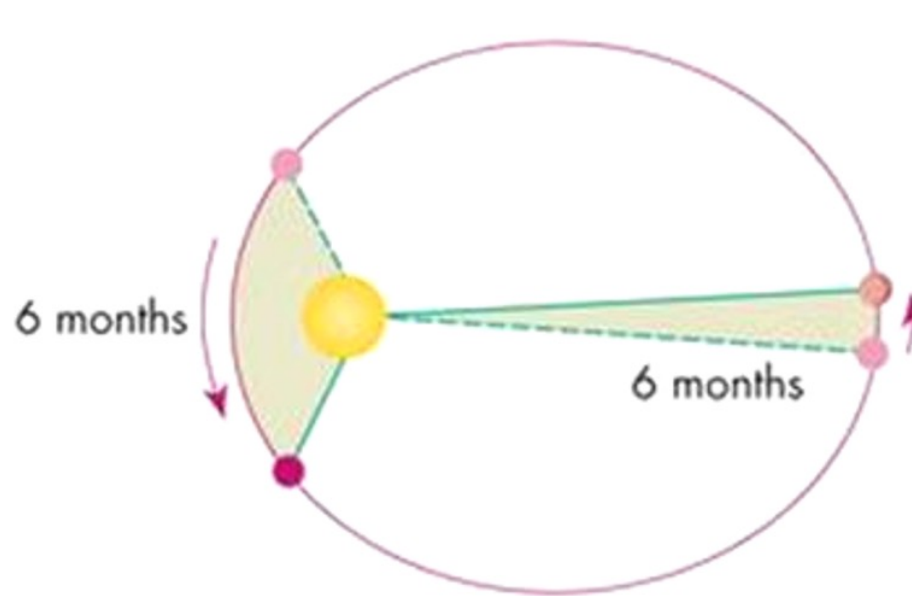


# Kepler's Three Laws of Planetary Motion



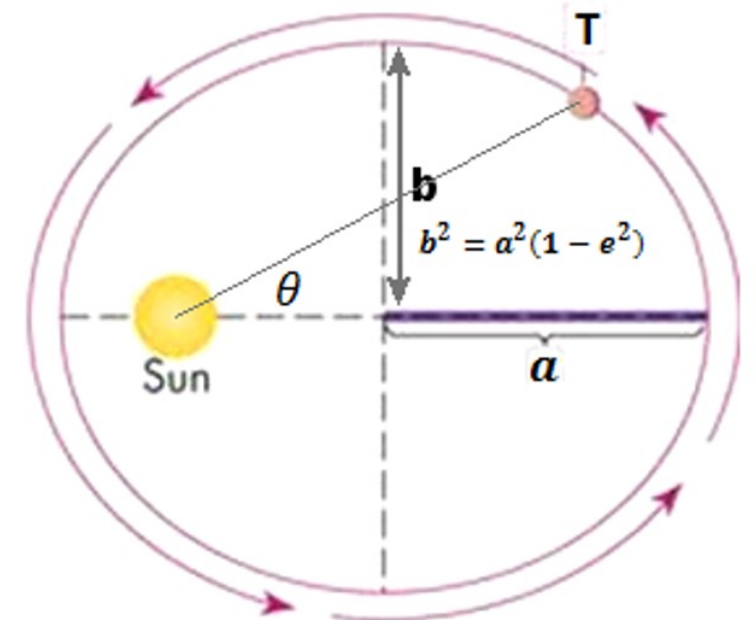
(1)

**The orbits are ellipses**



(2)

**Equal areas in equal time**



(3)

$T^2 \propto a^3$   $T$  = time to complete orbit  
 $a$  = semi-major axis



# Exoplanet detection: (Radial Velocity Method)

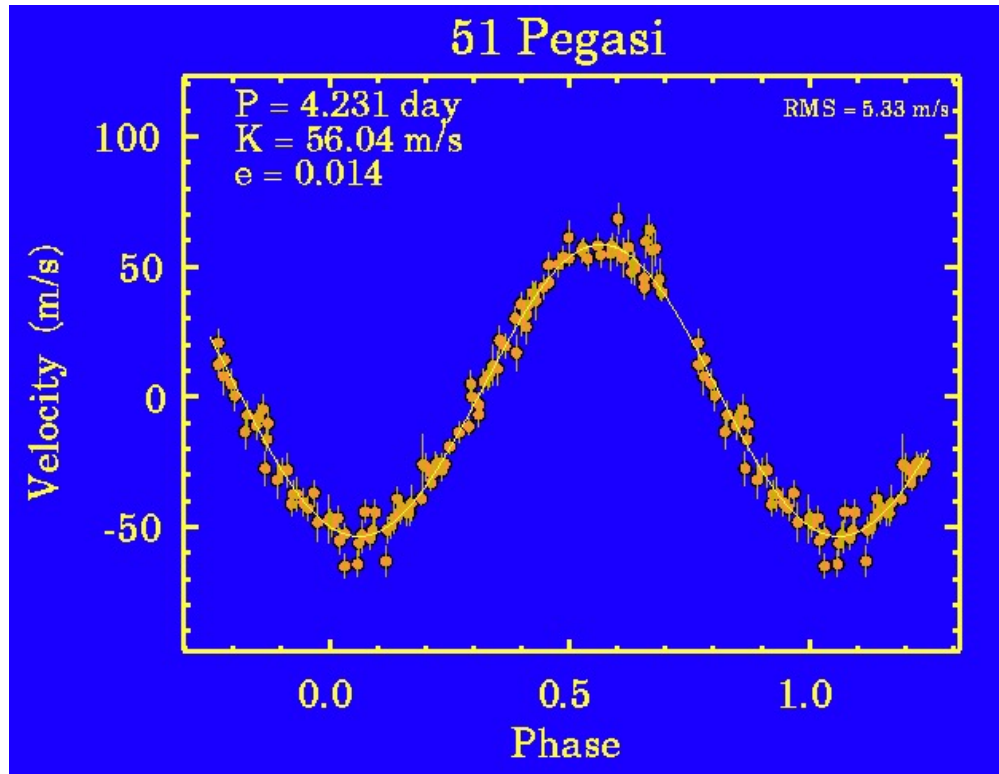
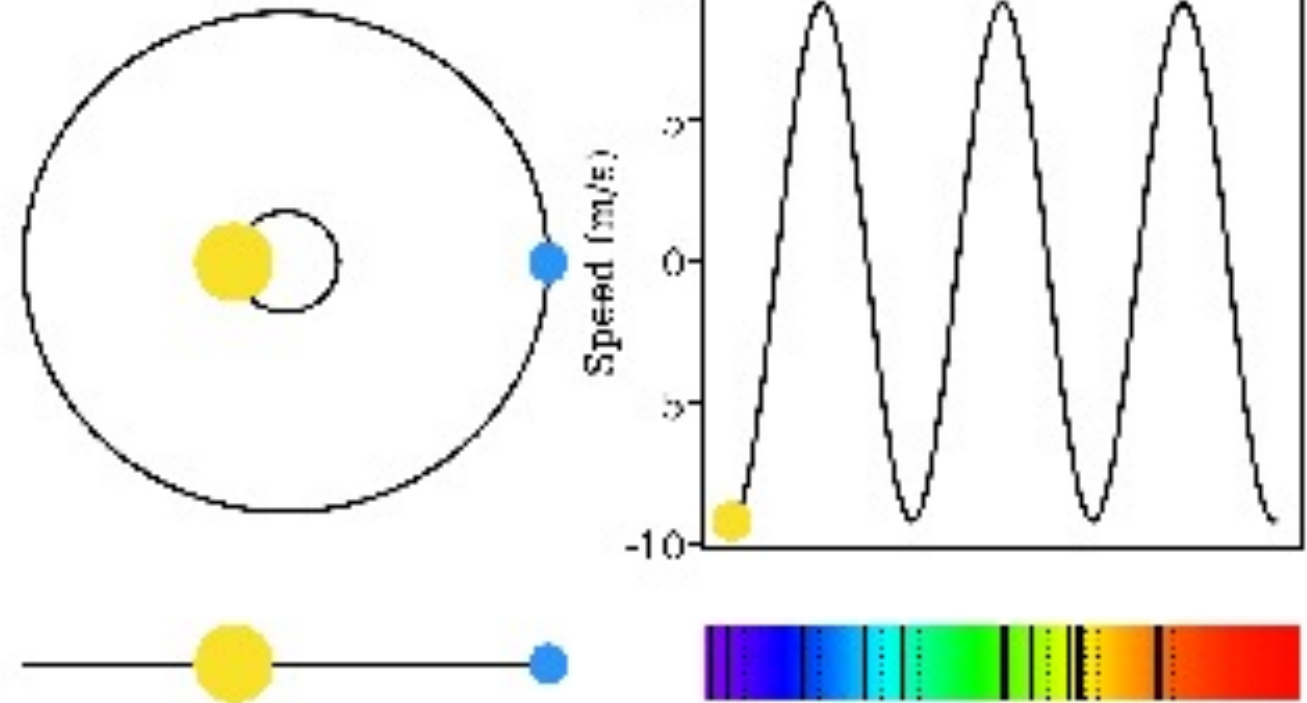
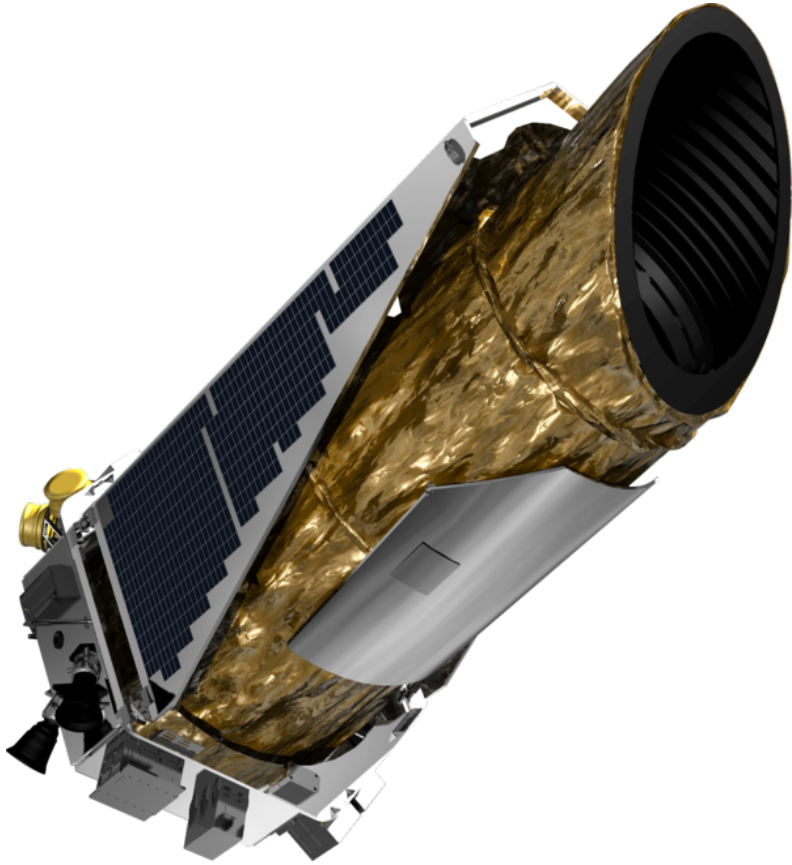


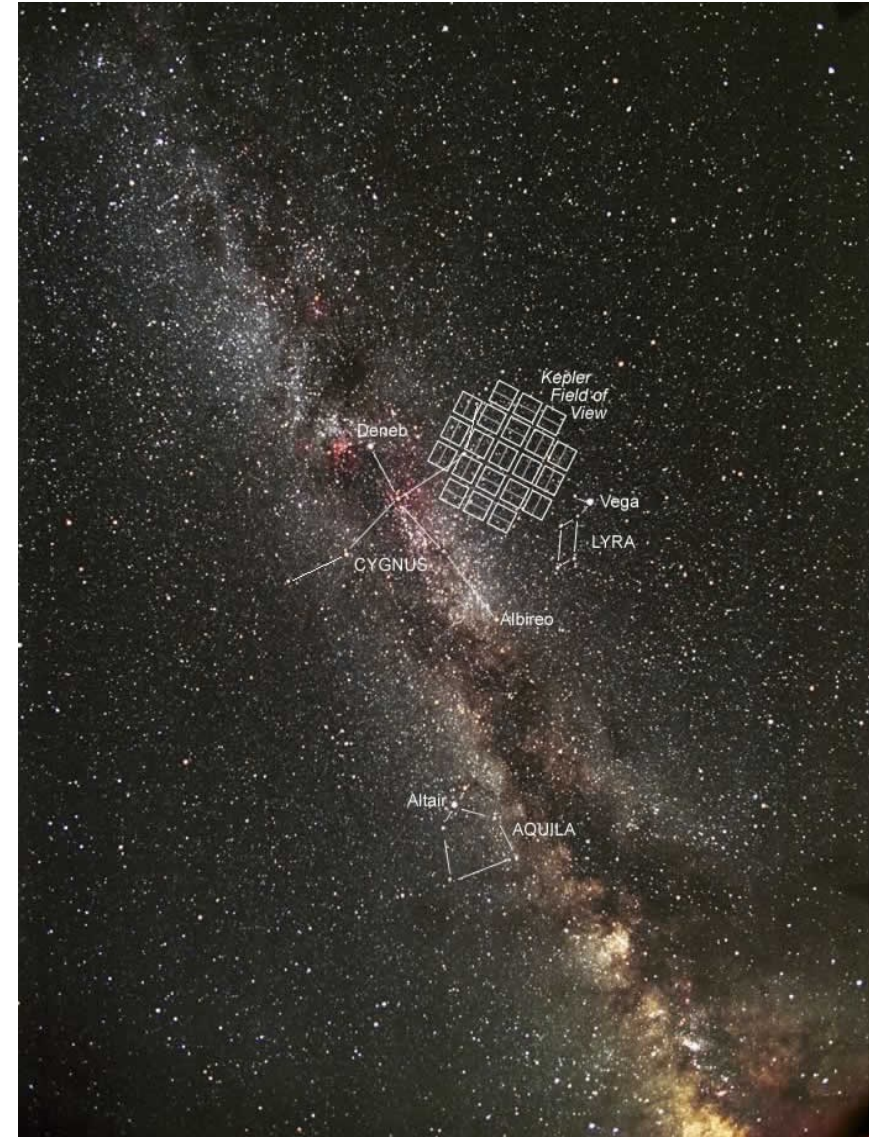
Figure 1: Diagram illustrating the radial velocity method for exoplanet detection.



# The Kepler Mission



The Kepler Spacecraft  
2009 - 2018



# Exoplanet Detection (Transit Method)

