Nicholas Copernicus

Personal Background
- 1473–1543
- Thorn (now Torum), Poland
- Merchants & Municipal Officials
- Polish Astronomer
- High Social Class
- Solid Education
- Best Universities

Personal Chronology
- Studied Liberal Arts (1491)
  - Jagiellonian Univ.
- Studied Law
  - Univ. of Cracow
- Studied Medicine
  - Univ. of Padua
    - Where Galileo taught a century later
    - Didn’t Complete Studies

Personal Chronology
- Studied Canon Law (1497)
  - Univ. of Bologna
- Doctorate, Univ. of Ferrara (1503)
    - Not unusual to get degree elsewhere
    - Lived with Mathematics Prof.
    - Domenico Maria de Novara
- Lectured on Astronomy
  - Rome (1500)

Personal Chronology
- Domenico Maria de Novara
  - Stimulated Copernicus’s Interests
    - Geographical & Astronomical
  - Critic of Astronomer Ptolemy
  - Together Observed Occultation
    - Eclipse of the moon
    - Star Aldebaran, 3/9/1497

Personal Chronology
- Return to Poland (1503-1510)
  - Uncle's Bishopric palace
    - Lidzbark Warminski
  - Administration of the Diocese
  - Conflict Against the Teutonic Knights
- Published First Book
  - Latin translation of letters on morals
  - 7th-century Byzantine writer
  - Theophylactus of Simocatta.
### Personal Chronology

- **Between 1507 and 1515**
  - Completed Astronomical Treatise
  - Known as the Commentariolus
  - Not Published Till 19th Century
  - Principles Heliocentric Astronomy.

- **Church Administrator (1512)**
  - Frauenberg, East Prussia.
  - Financial Responsibilities
  - No Priestly Duties.
  - Commission on Calendar Reform
  - 1515

- **Wrote a Treatise on Money**
  - 1517
  - De Revolutionibus Orbium Coelestium
  - His Major Work,
  - On the Revolutions of Celestial Spheres
  - Finished by 1530
  - First published by Lutheran printer
    - Nuremberg, Germany, 1543.

### 16th-Century Cosmology

- **Geocentric Universe**
  - Spheres Held Celestial Bodies
    - The moon
    - Mercury
    - Venus
    - The sun,
    - Mars
    - Jupiter
    - Saturn
  - From Earth Outward

- **Eventually Replaced**
  - Copernican Theory
- **Geocentric Universe**
  - Earth
    - Stationary and motionless
    - Center of concentric, rotating spheres.

- **Flaws In The Geocentric Universe**
  - So-called fixed stars
  - Said to wobble slowly
  - Produces precession of the equinoxes

- **Apparent retrograde motion**
  - Mars, Jupiter, and Saturn
  - Planet motion halts & reverses
16th-Century Cosmology

Copernican System

- Heliocentric Theory
  - First presented (1512 or earlier)
  - “Commentariolus”
  - Completed by 1530
  - Published (1543)
  - “De revolutionibus orbium coelestium”

Copernican System

- Heliocentric Theory
  - Sun is at rest
  - Near the center of the universe
  - Earth spins on its axis once daily
  - Revolves annually around the sun
  - Precesses on its axis
  - Wobbles like a top
  - Planets also rotate

Copernican System

- Heliocentric Theory Explains
  - Motions of Sun & Stars
  - Retrograde motion of some planets
- Heliocentric Theory Retains
  - Solid planet-bearing spheres
  - Finite outermost sphere of fixed stars was stationary

Copernican System

- Ten Copernicans (1543 and 1600)
  - Worked outside the universities
  - Galileo & Kepler
- Different reasons for support
  - Middle position
  - Danish astronomer Tycho Brahe
    - The earth remained at rest and all the planets revolved around the sun as it revolved around the earth
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