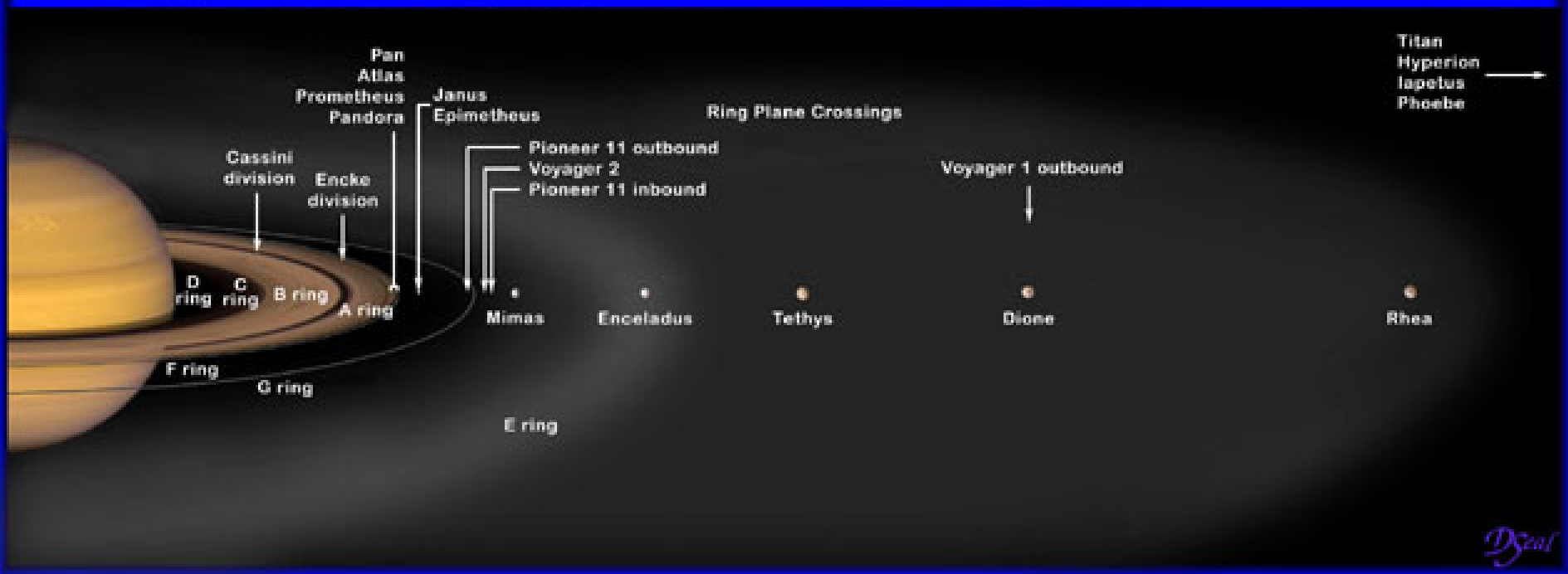
The Rings of Saturn and Cassini Discoveries

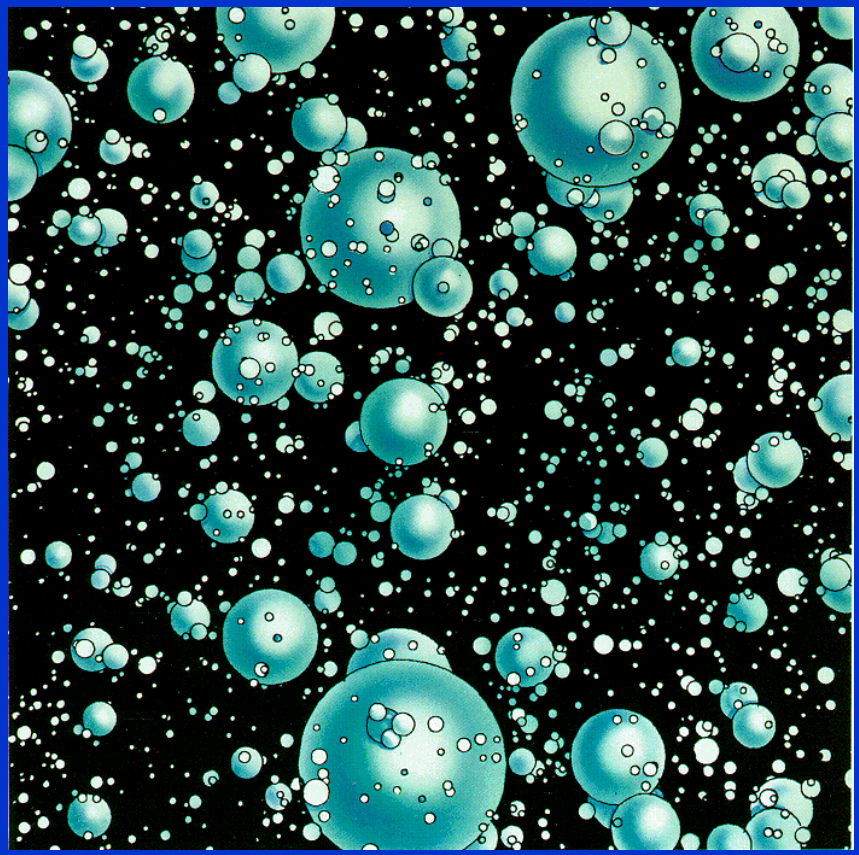
Dr. Linda J. Spilker

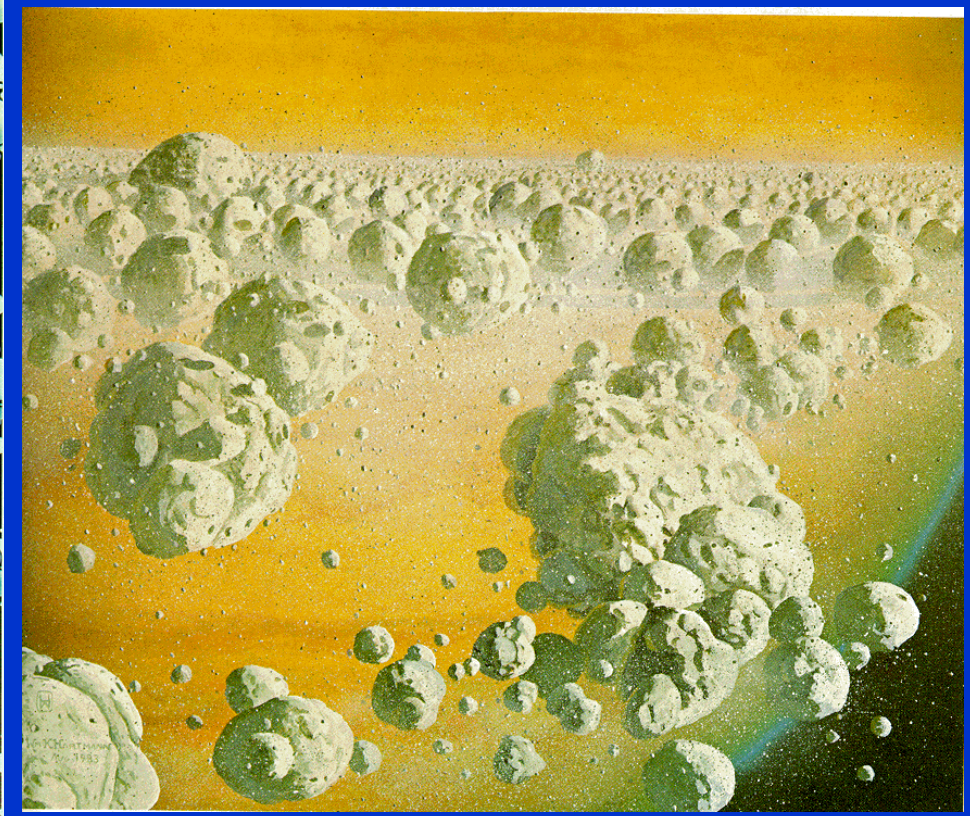
31 August 2004

Saturn's Satellites and Ring Structure

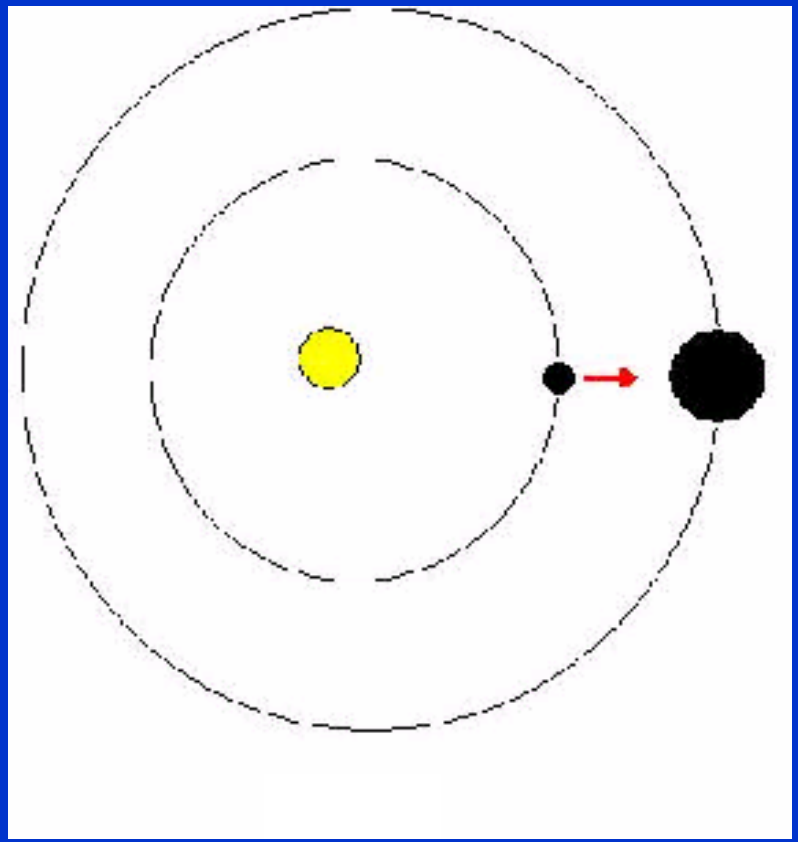


Ring Particle Models

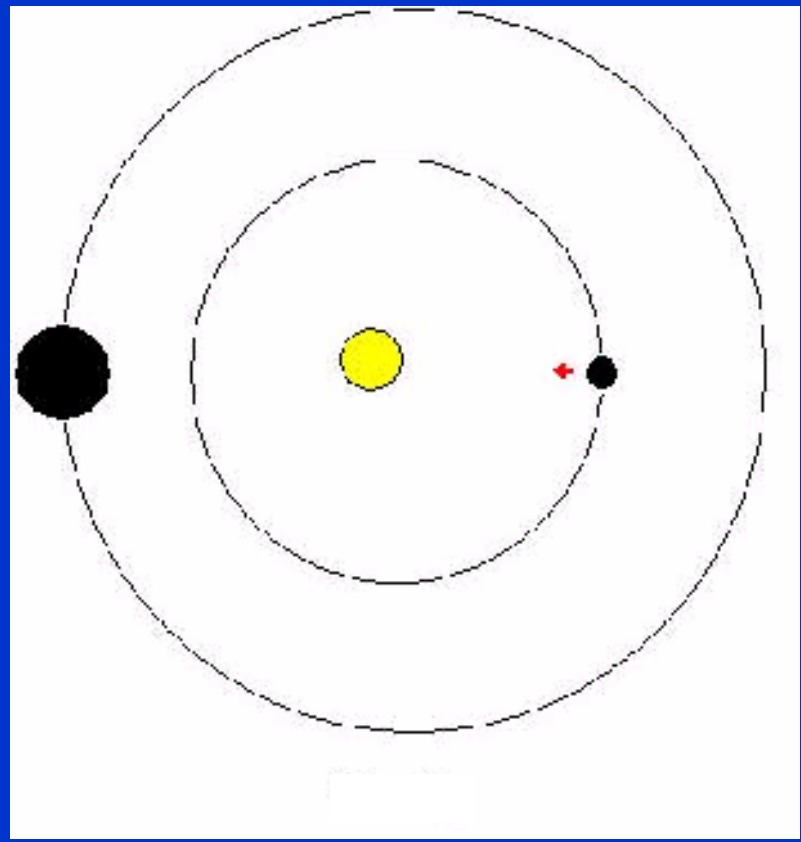




Satellite Influence on Ring Particle

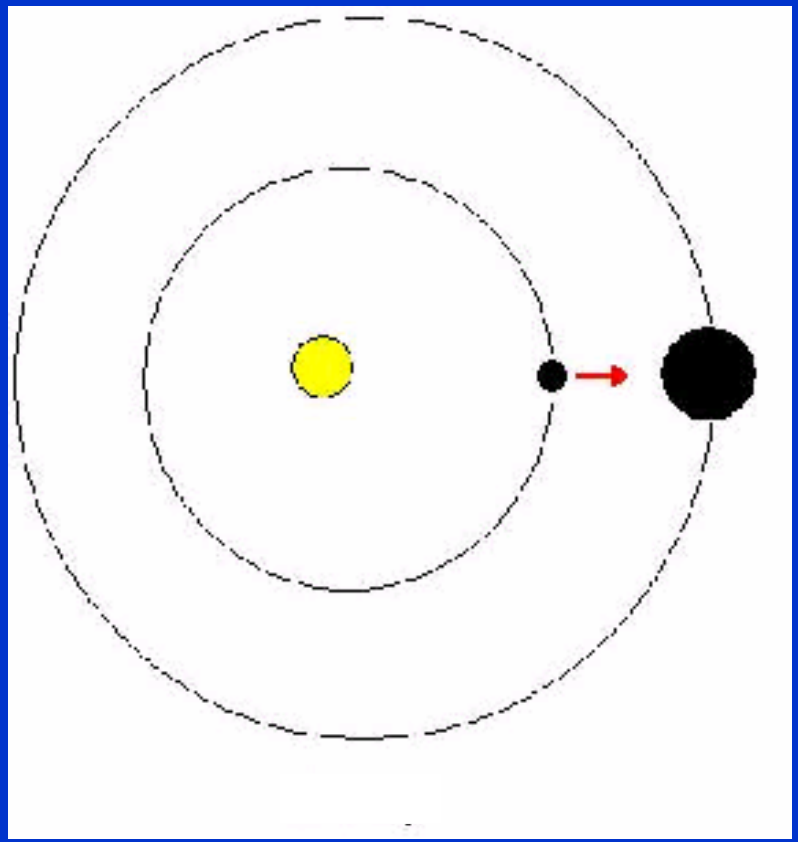


T = 0

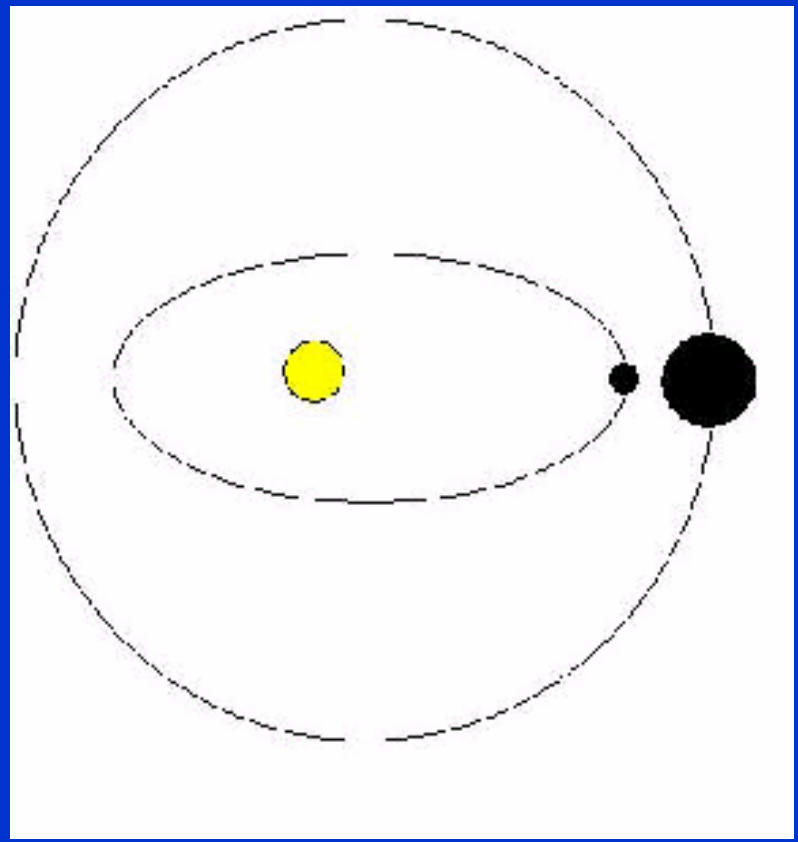


T=1/2 orbit

Satellite Influence -- II

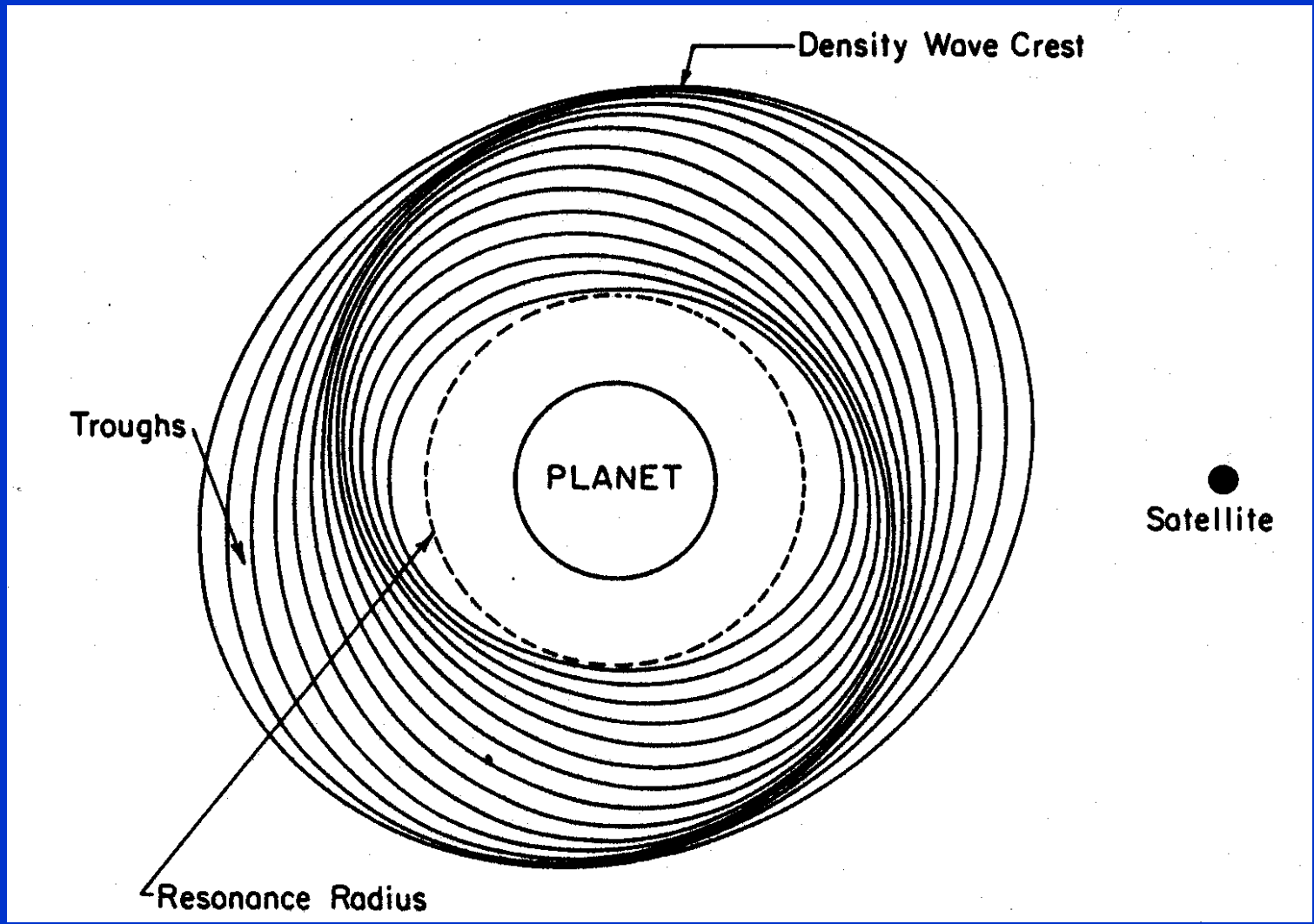


T = 1 orbit



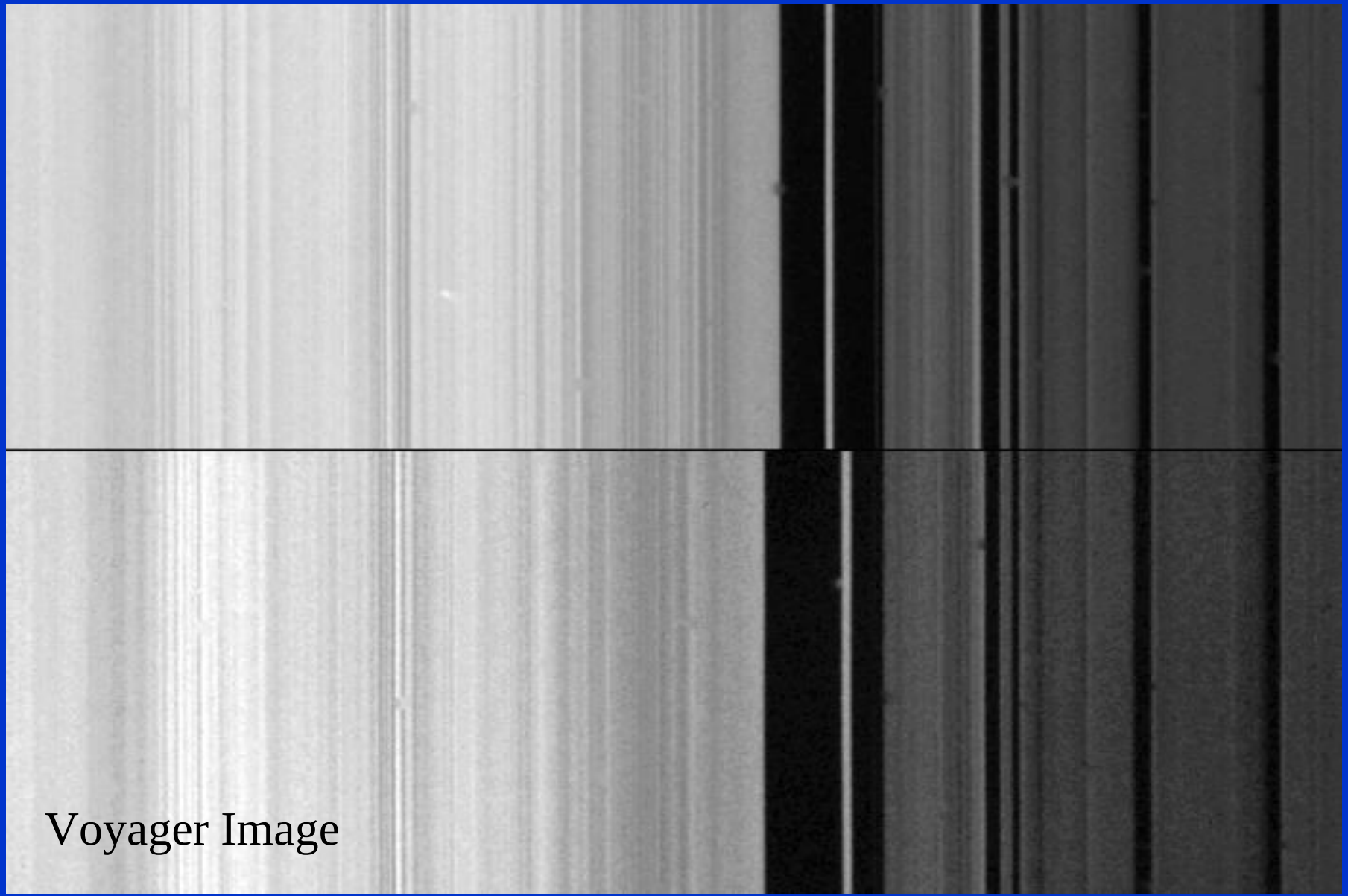
Pull on ring particle
after many orbits

Density Wave– 2:1 Resonance

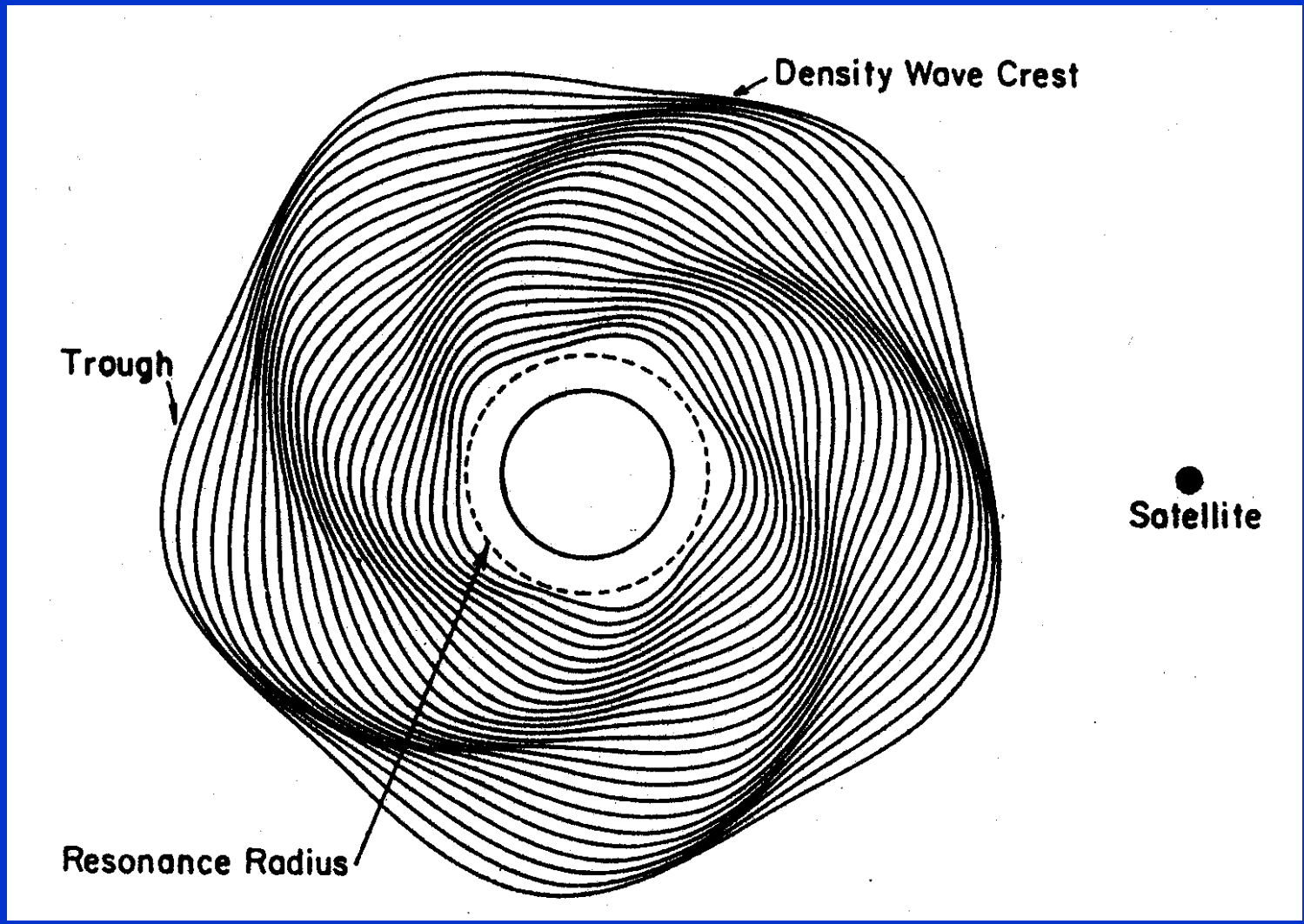


* B ring outer edge is at Mimas 2:1 Resonance

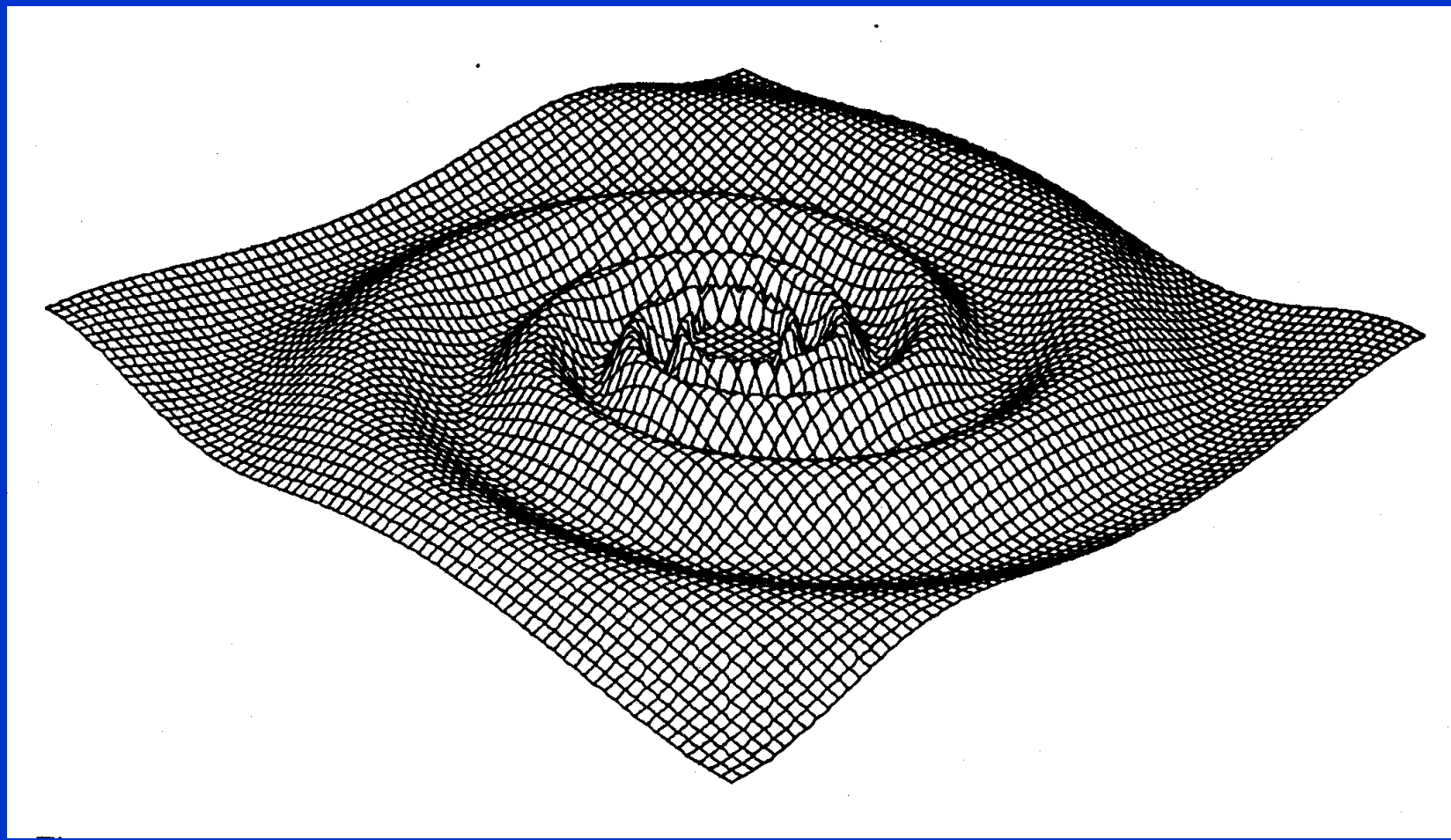
Outer Edge of B Ring

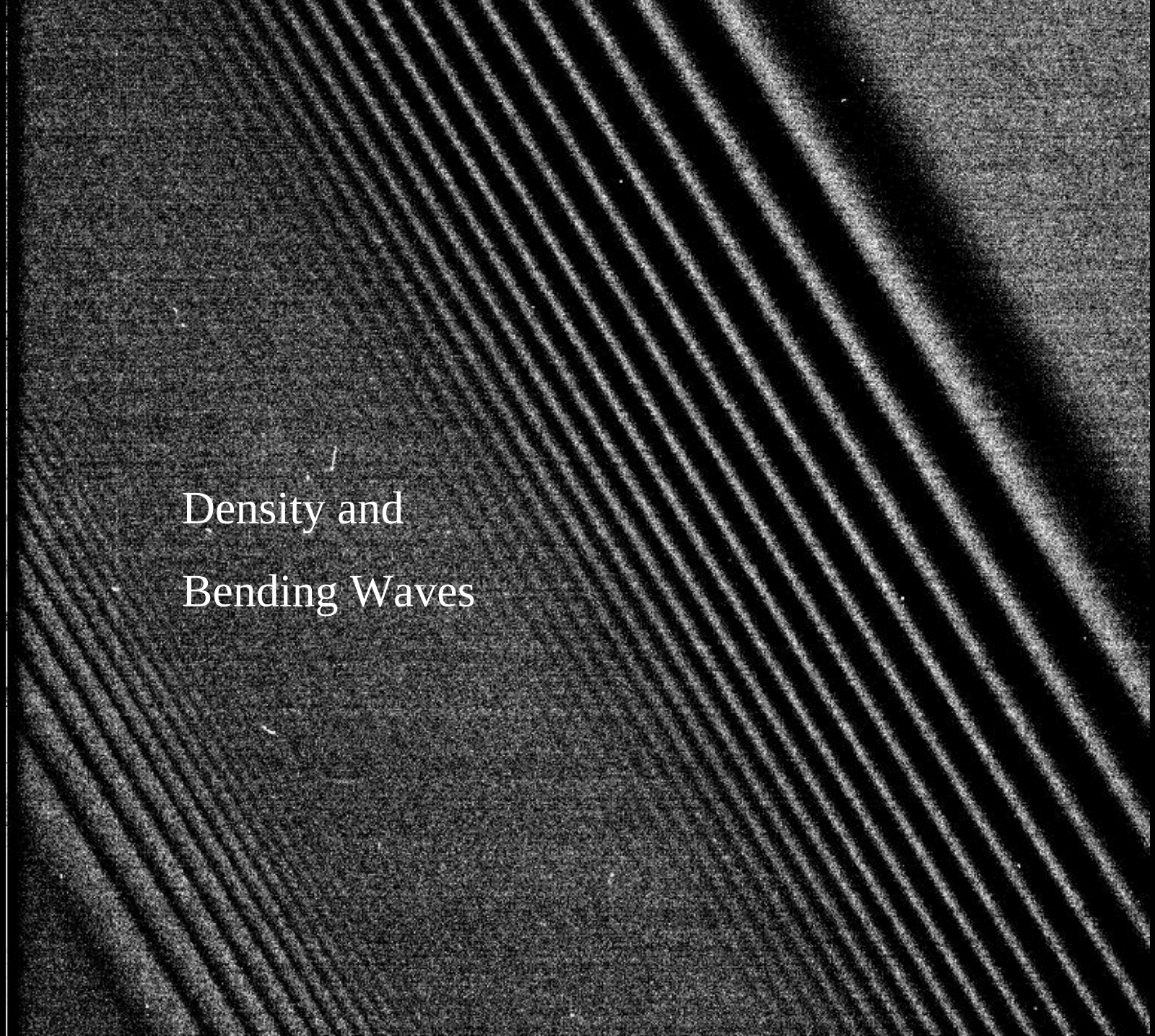


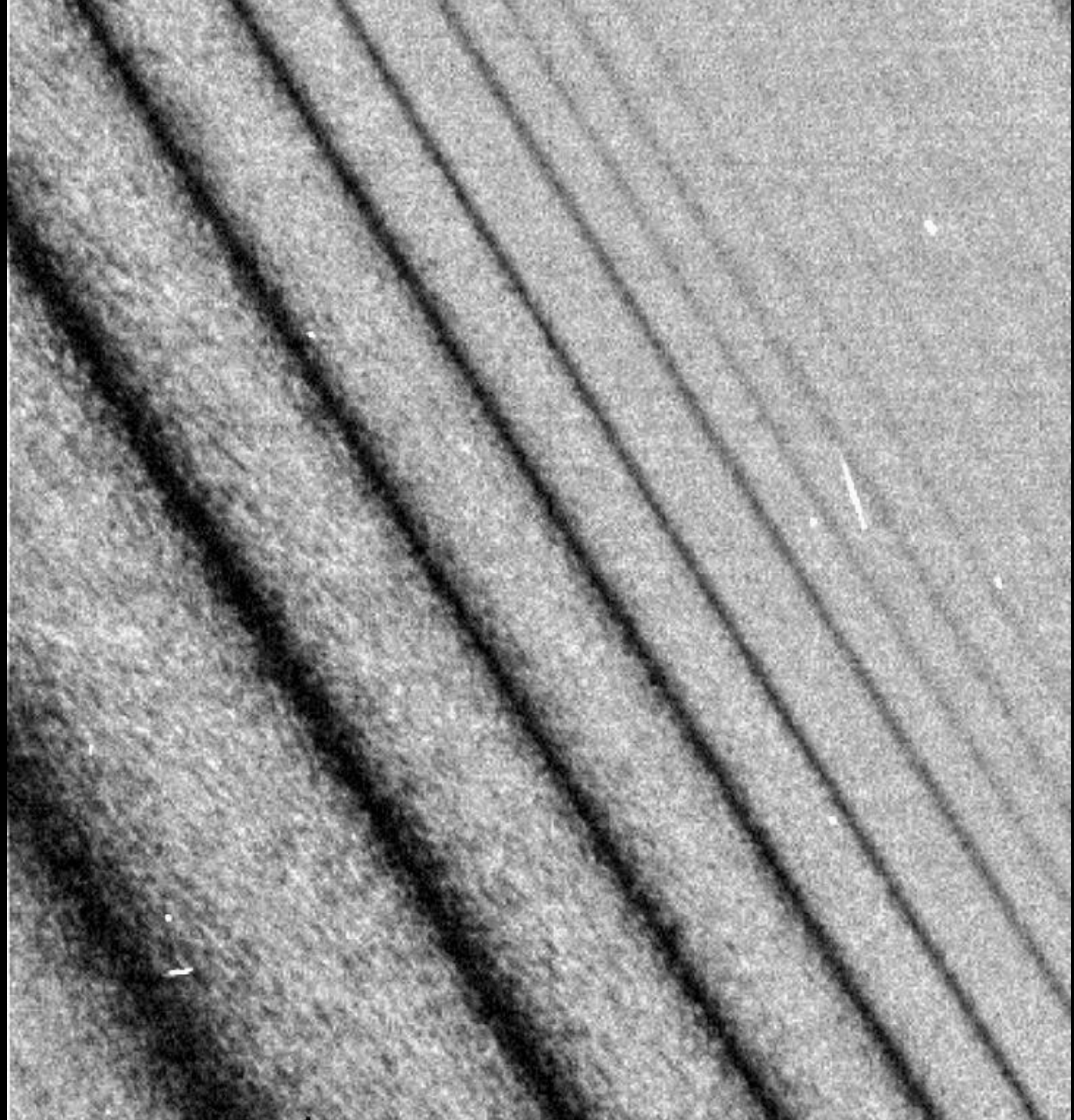
Density Wave– 5:4 Resonance

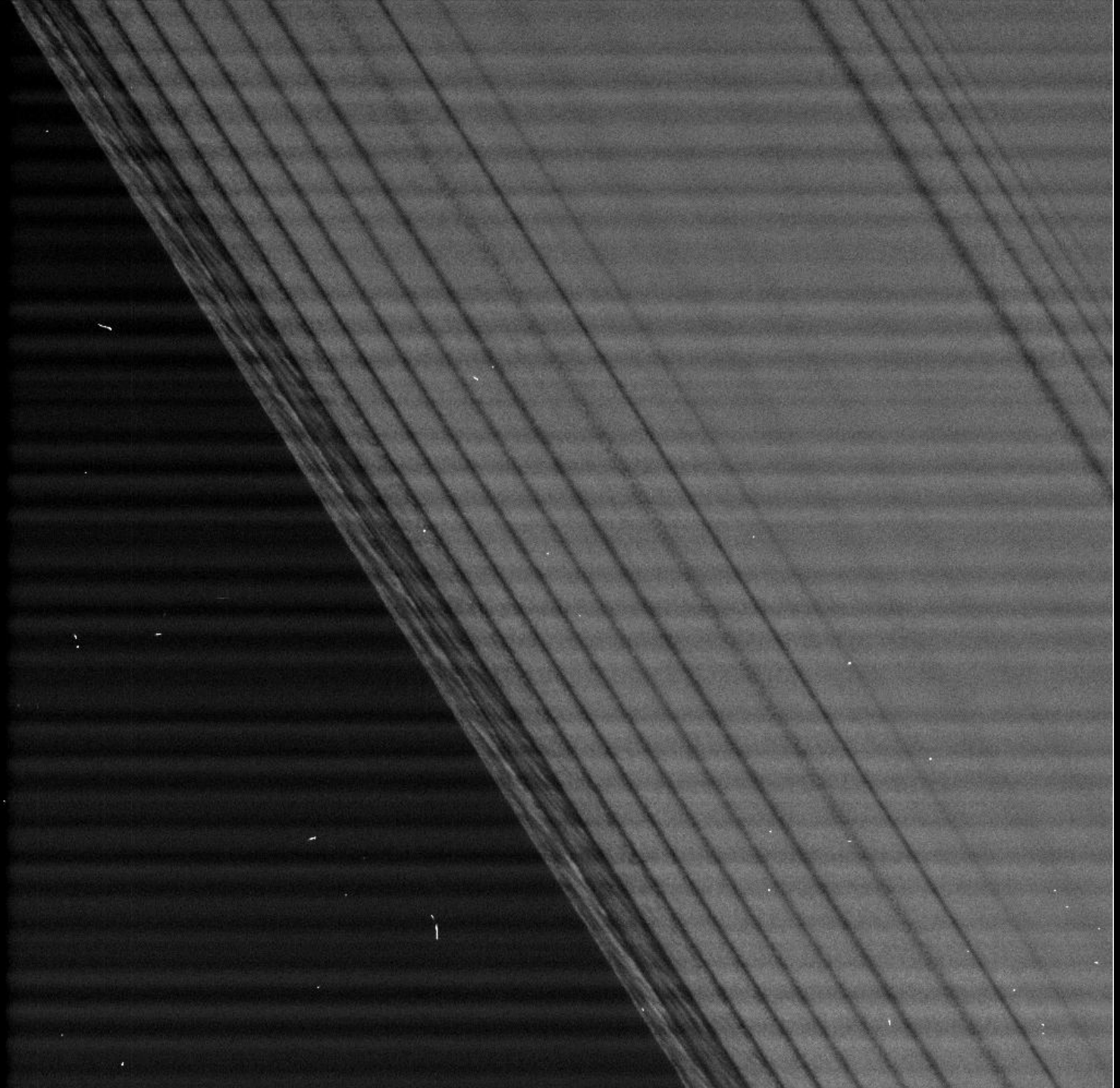


Bending Wave Graphic

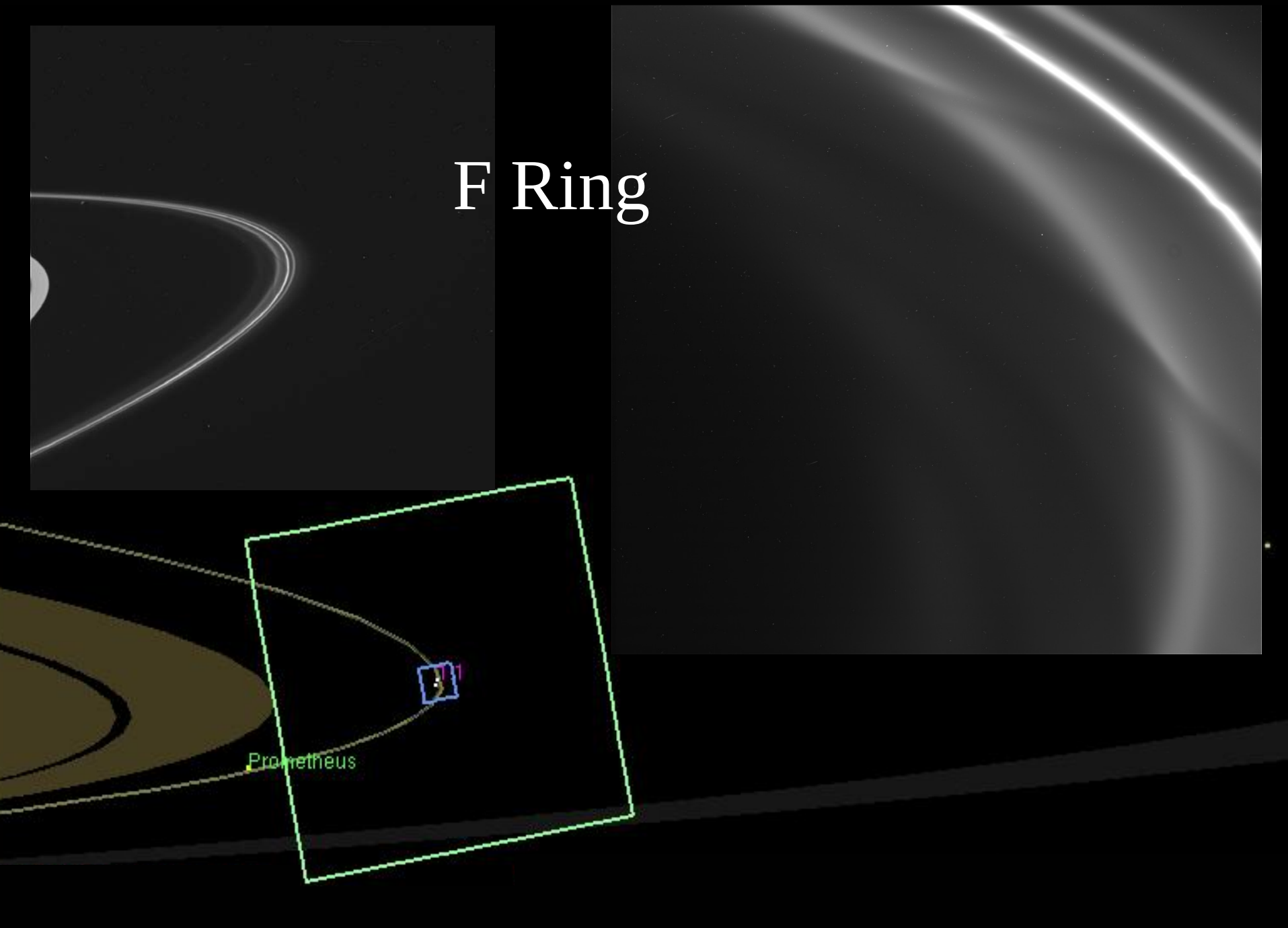


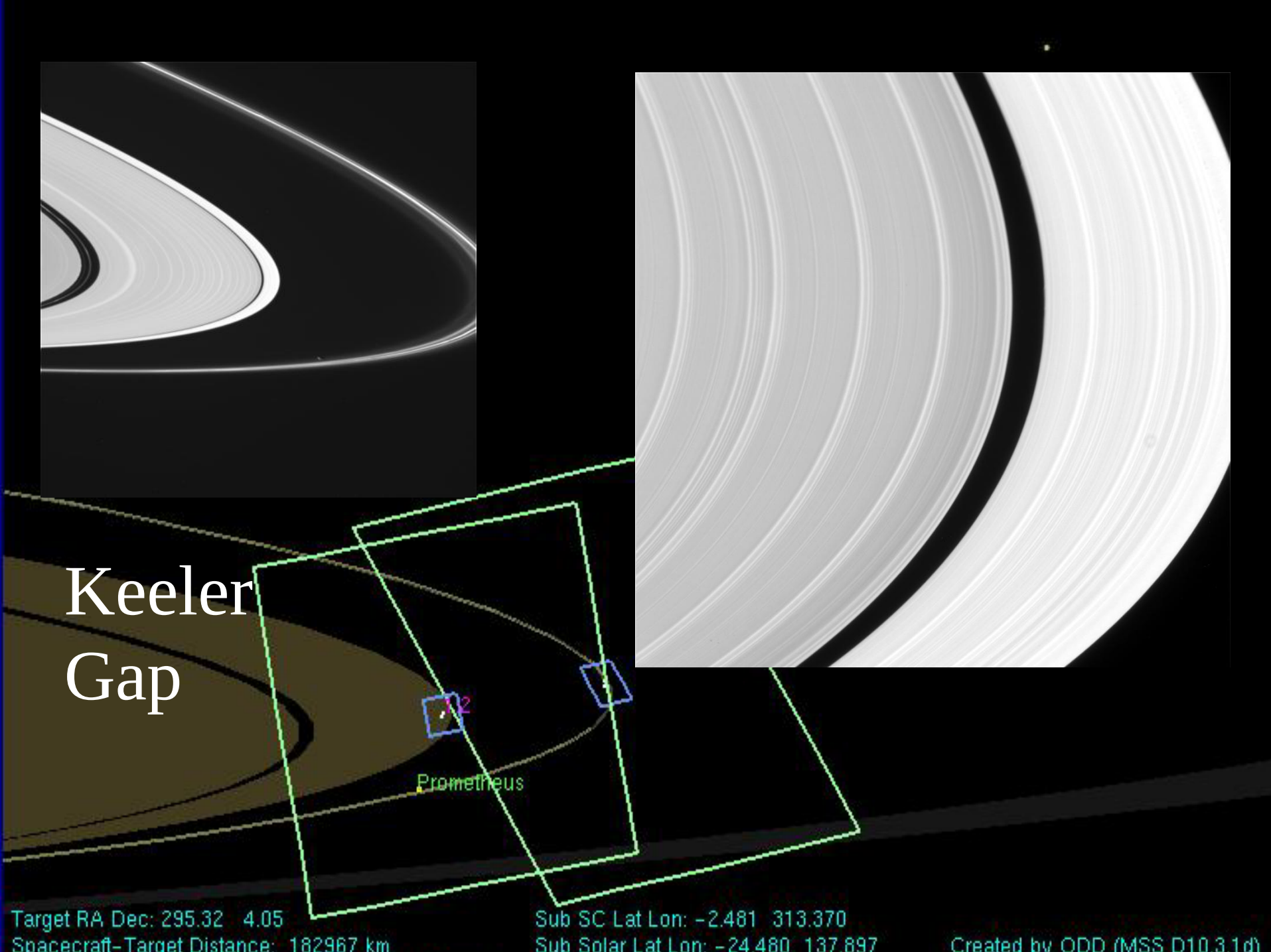

Density and
Bending Waves

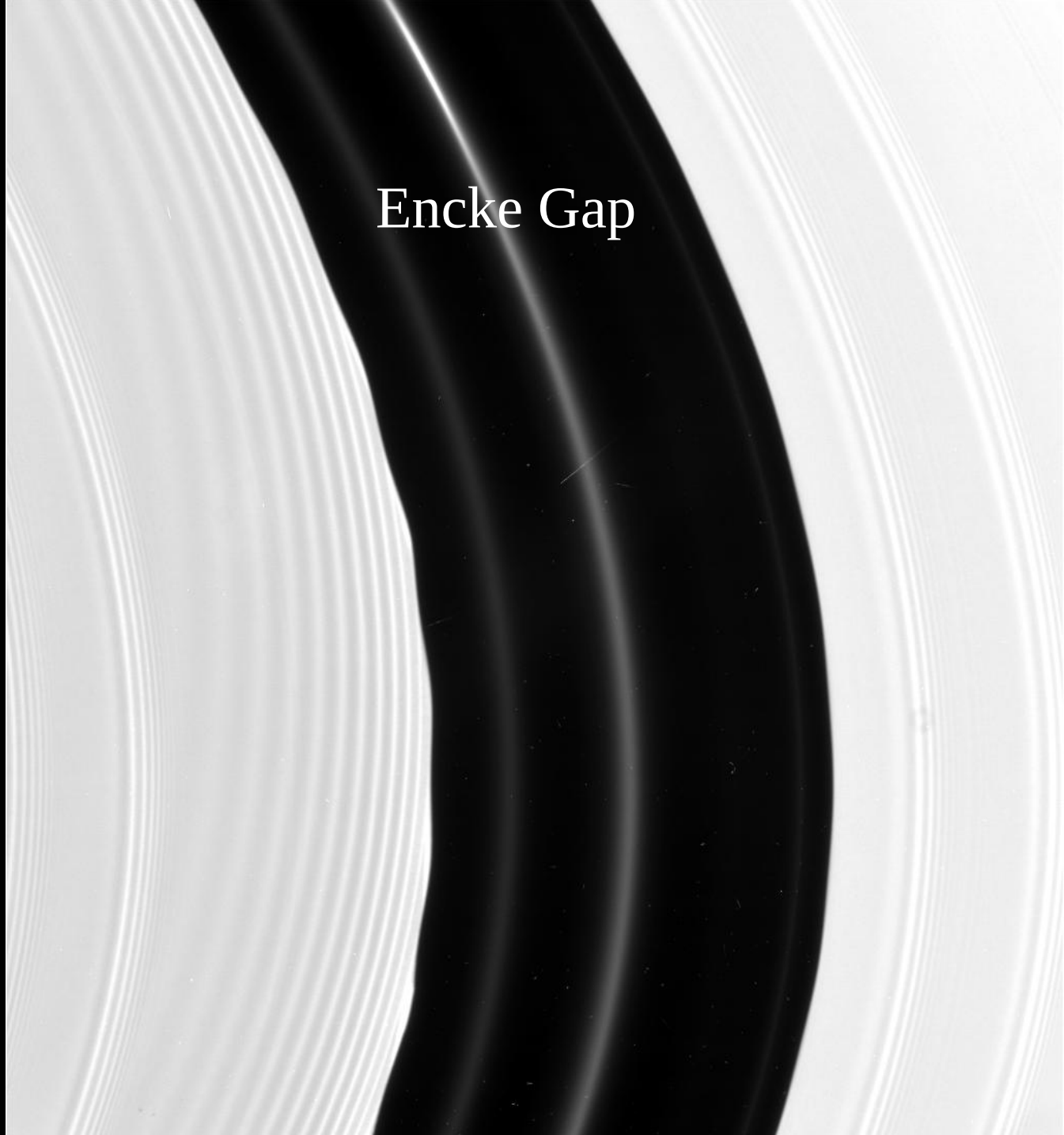




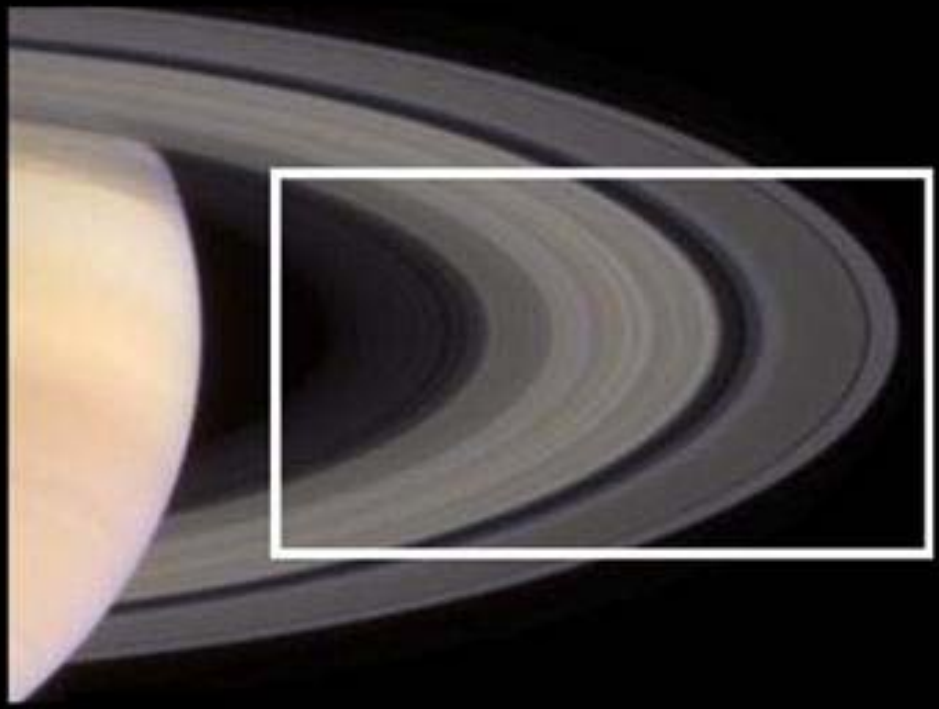
F Ring



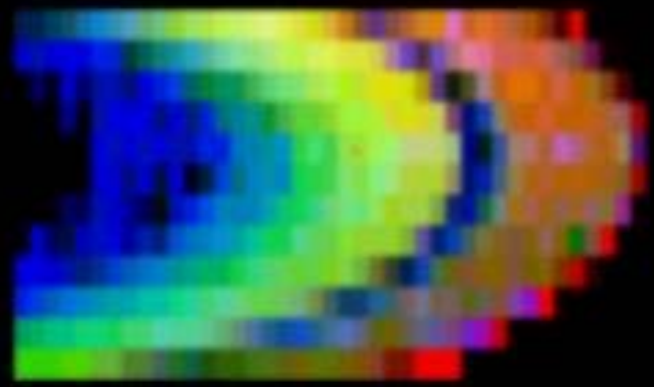

Keeler
Gap
Prometheus
Target RA Dec: 295.32 4.05
Spacecraft-Target Distance: 182967 km
Sub SC Lat Lon: -2.481 313.370
Sub Solar Lat Lon: -24.480 137.897
Created by ODD (MSS D10.3.1d)


Encke Gap

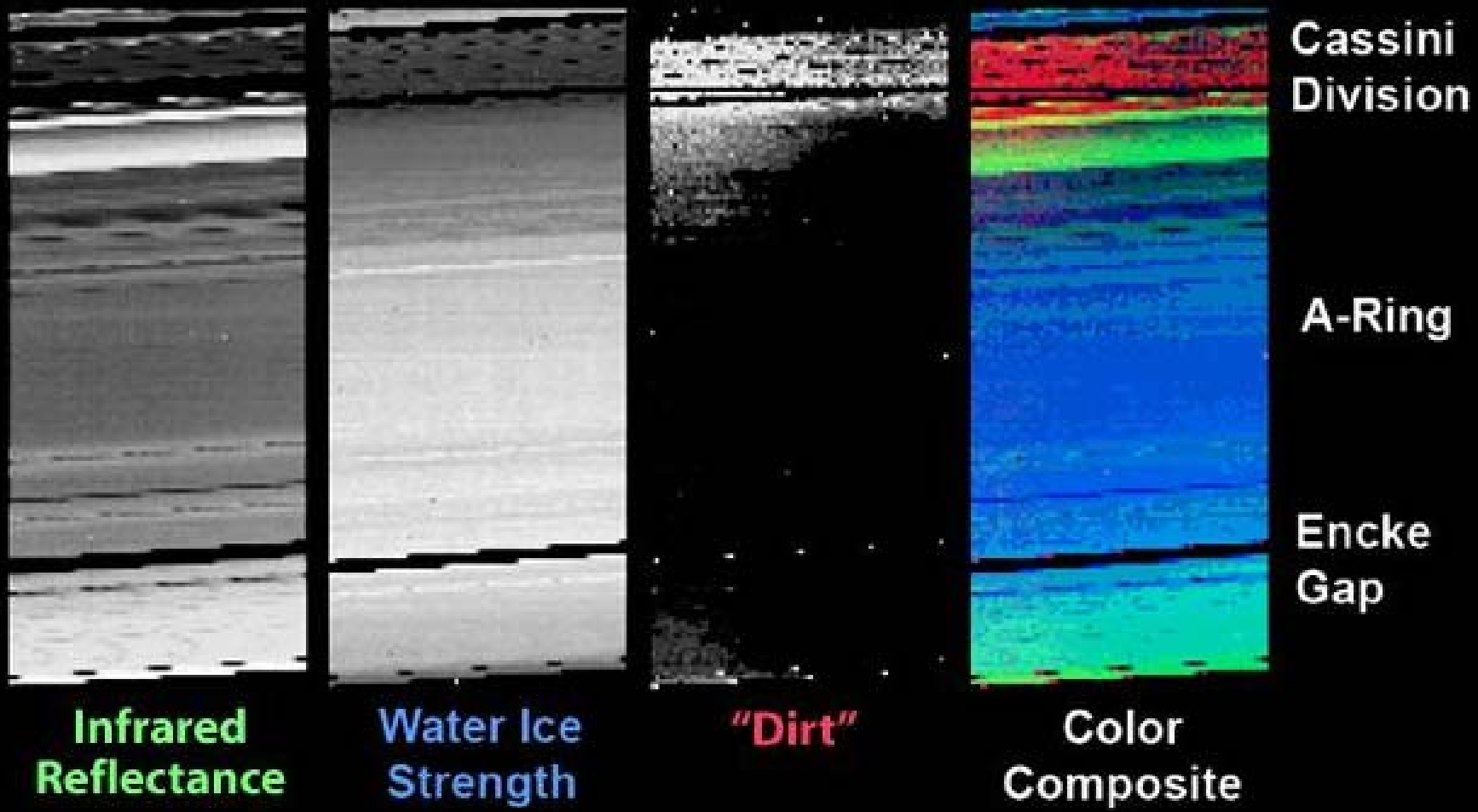
Cassini Visual and Infrared Mapping Spectrometer

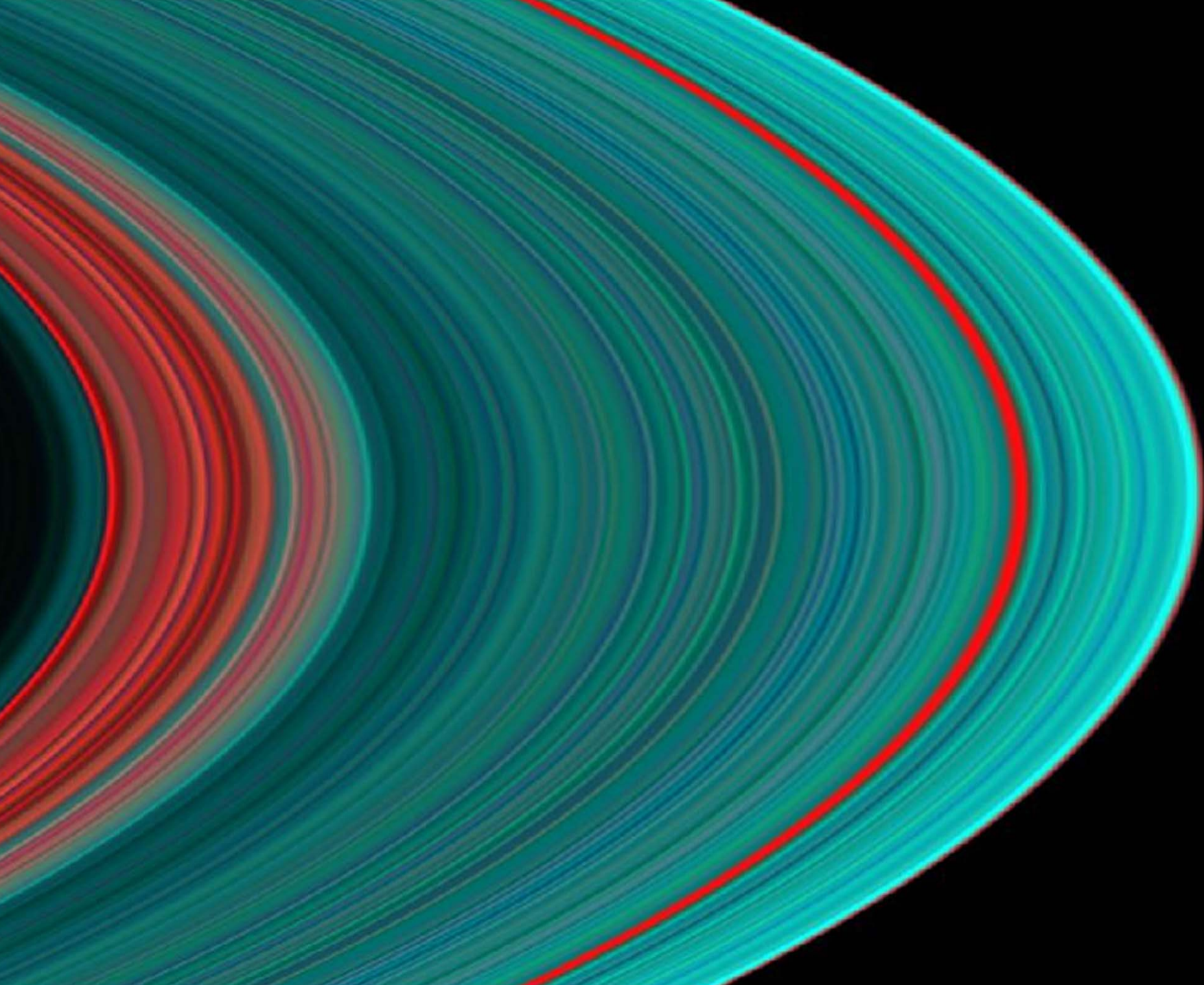


grain-size composite

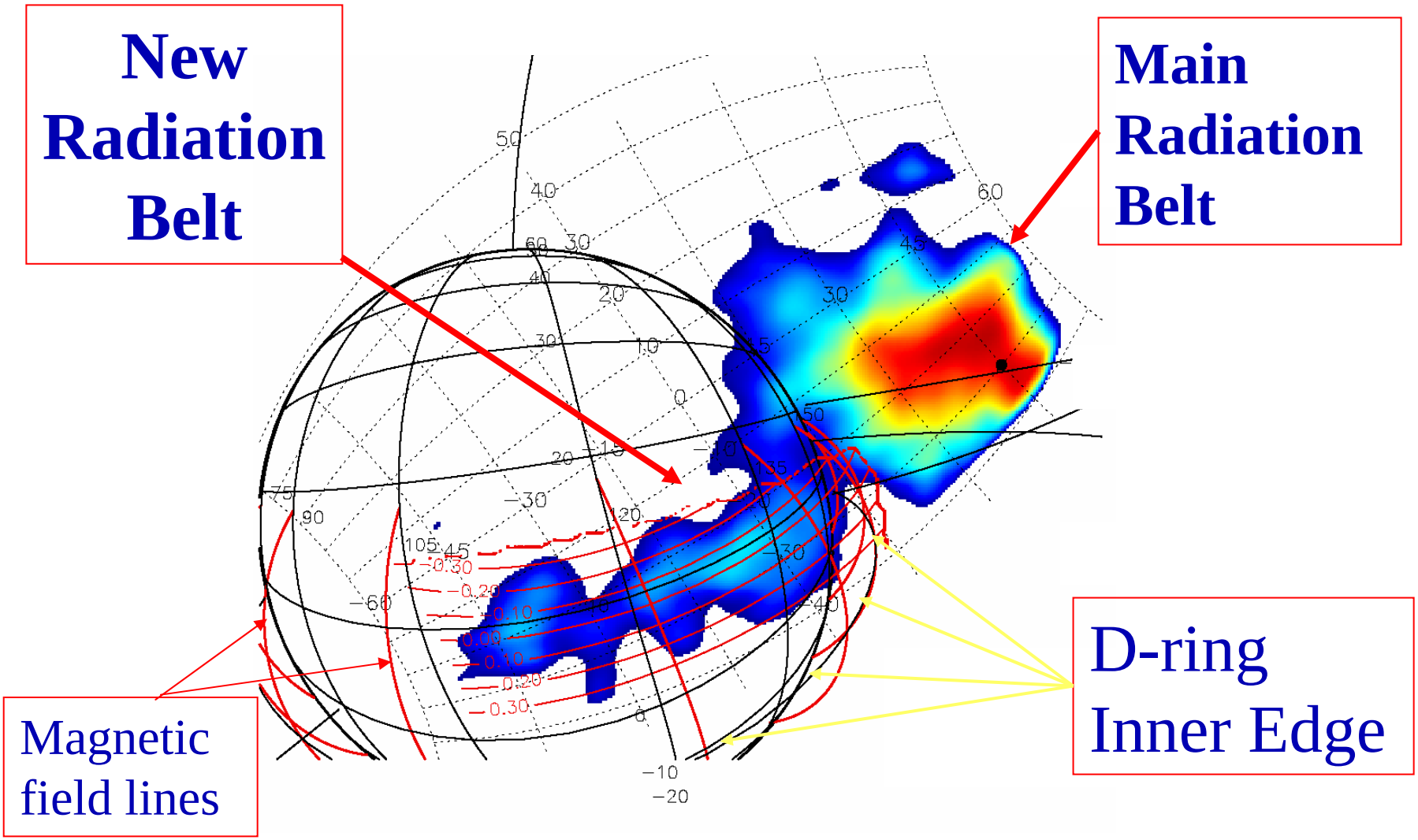


small large


Cassini Division
A-Ring
Encke Gap
Infrared Reflectance
Water Ice Strength
"Dirt"
Color Composite



Cassini Magnetospheric Imager Discovers Radiation Belt Inside Saturn's Rings



Grab a Ring-side seat
and explore Saturn
with us!
http://saturn.jpl.nasa.gov