

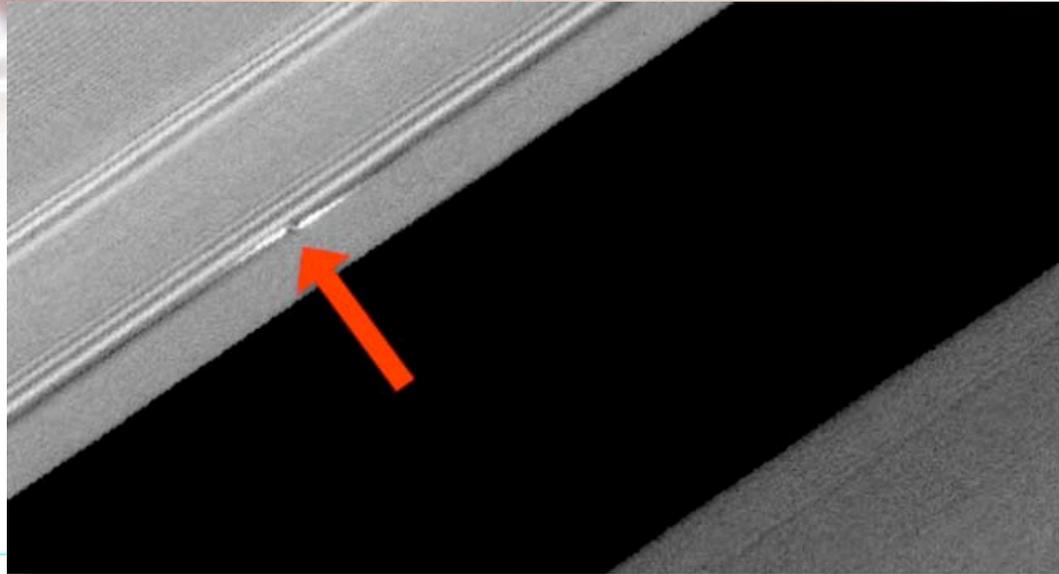
JPL SCIENCE HIGHLIGHT: Science Mission Directorate (SMD)

July 21, 2010

JPL Science Highlight: Planetary Program Support

Research by Carolyn Porco, Space Science Institute; Linda Spilker, NASA's Jet Propulsion Laboratory; Matthew Tiscareno, Cornell University
Science Writer, Samantha Harvey

Propeller Gaps in Saturn's Rings Reveal Clues of Disk Formation

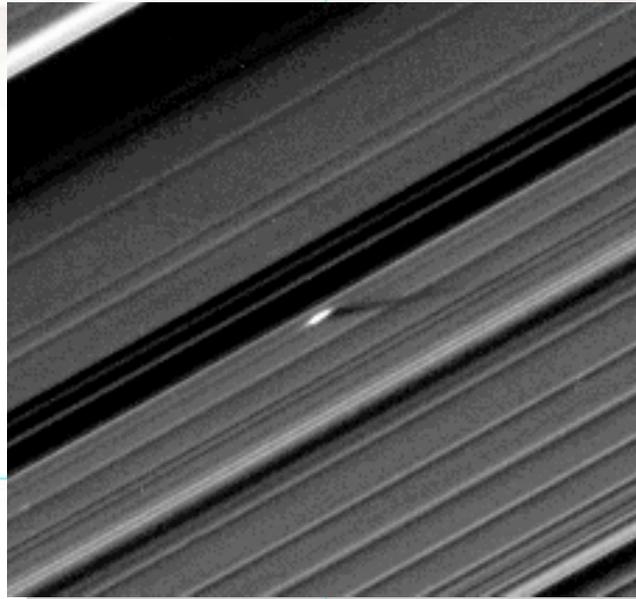


Scientists using NASA's Cassini spacecraft at Saturn have stalked a new class of moons in the rings of Saturn that create distinctive propeller-shaped gaps in ring material. The research gives scientists an opportunity to time-travel back into the history of our solar system to reveal clues about disks around other stars in our universe that are too far away to observe directly.

The results are published in a new study in the July 8, 2010, issue of the journal *Astrophysical Journal Letters*.

The new paper, led by Matthew Tiscareno, a Cassini imaging team associate based at Cornell University, Ithaca, N.Y., reports larger and rarer moons in another part of the A ring farther out from Saturn. With propellers as much as hundreds of times as large as those previously described, these new objects have been tracked for as long as four years. The propeller features are up to several thousand kilometers (miles) long and several kilometers (miles) wide. The moons embedded in the ring appear to kick up ring material as high as 0.5 kilometers (1,600 feet) above and below the ring plane, which is well beyond the typical ring thickness of about 10 meters (30 feet).

Propeller Gaps in Saturn's Rings Reveal Clues of Disk Formation (Cont'd)



Implications:

With this new discovery, scientists can now track disk-embedded moons individually over many years.

Significance to Solar System Exploration:

Observing the motions of disk-embedded objects provides a rare opportunity to gauge how the planets grew, and interacted with the disk of material surrounding the early sun. The discovery provides a glimpse back in time of how the Solar System ended up as it is today.