What is the Kuiper Belt?

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When people think about the solar system, they usually think about the eight planets and maybe the asteroid belt between Mars and Jupiter. But the solar system doesn't stop at Neptune. Beyond it lies a vast, dimly-lit ring of icy bodies stretching billions of kilometres into the darkness. This is the **Kuiper Belt**.

What's out there

The Kuiper Belt is a doughnut-shaped region of the solar system that begins just beyond Neptune's orbit (about 30 times farther from the sun than Earth) and extends to roughly 50 times Earth's distance. It's home to hundreds of thousands of icy objects — remnants left over from the formation of the solar system about 4.6 billion years ago.

These objects, called **Kuiper Belt Objects** or KBOs, range from small icy chunks to dwarf planets. **Pluto** — famously demoted from planet status in 2006 — is the most well-known Kuiper Belt Object. Others include Eris, Makemake, and Haumea.

Think of the solar system like a fried egg. The yolk is the sun, the white is the region of the planets — and the Kuiper Belt is the crispy edge you didn't notice was there. Most of the action happens in the middle, but the outer edge is enormous and contains its own strange world of frozen objects.

Where comets come from

Many of the comets that swing through the inner solar system — creating those dramatic tails of gas and dust — originated in the Kuiper Belt. Gravitational nudges from the giant planets occasionally knock a KBO out of its stable orbit, sending it on a long inward journey toward the sun. As it gets warmer, ices vaporise and stream behind it, creating the comet's tail.

New Horizons and Pluto

In 2015, NASA's **New Horizons** spacecraft became the first to fly past Pluto, revealing a surprisingly complex world with mountains of water ice, a heart-shaped

nitrogen plain, and a thin atmosphere. In 2019 it flew past another KBO called Arrokoth — the most distant object ever visited by a spacecraft. It turned out to look like a rusty snowman.

Beyond the Kuiper Belt

Even further out, past the Kuiper Belt, astronomers believe there exists an even more distant region called the **Oort Cloud** — a vast spherical shell of icy objects extending perhaps a quarter of the way to the nearest star. We've never directly observed it, but we think it's where long-period comets (ones that take thousands of years to orbit the sun) come from.