Dwarf planet mysteries beckon to New Horizons

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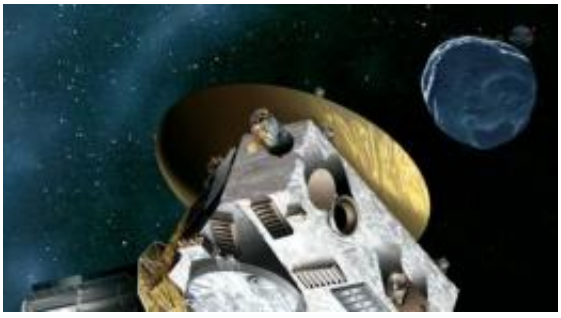

(PhysOrg.com) -- At this very moment one of the fastest spacecraft ever launched -- NASA's New Horizons -- is hurtling through the void at nearly one million miles per day. Launched in 2006, it has been in flight longer than some missions last, and still has four more years of travel to go.

New Horizons headed for the lonely world of Pluto on the outer edge of the solar system.

Although astronomers now call Pluto a dwarf planet, "it's actually a large place, about 5,000 miles around at the equator," says Alan Stern, principal investigator for the mission. "And it's never been explored."

Indeed, no spacecraft has ever visited Pluto or any dwarf planet.

"This is a whole new class of worlds," says Stern. "To understand the solar system, we need to understand worlds like Pluto."

Pluto is a resident of the Kuiper Belt, a vast region beyond the orbit of Neptune. Stern believes "the Kuiper Belt contains a thousand dwarf planets or more – a whole zoo of them! Dwarf planets are, in fact, the most numerous class of planets in the solar system, and probably in the whole universe."

Pluto is a world of mysteries. For one thing, Stern wonders, what are the molasses-colored patches on Pluto's surface seen by the Hubble Space Telescope? Some scientists think they could be deposits of primordial organic matter. "New Horizon's spectrometers will help us identify the kinds of organic molecules on Pluto. We expect to find something pretty interesting."

Hubble recently contributed more intrigue by spotting a new moon circling Pluto -- bringing the total to four. Composite Hubble images of Pluto now resemble a miniature planetary system. New Horizons will hunt for even more moons as it approaches the dwarf planet.

The probe is primed for detective work -- equipped with instruments capable of "knocking the socks off anything Voyager carried." In addition to state of the art spectrometers, New Horizons wields one of the largest and highest resolution interplanetary telescopes ever flown. It's called LORRI, short for Long-Range Reconnaissance Imager.

"At closest approach to Pluto – about 10,000 km up – LORRI can resolve details almost as well as a spy camera. The view will be incredible. If we flew this instrument over Earth at that altitude, we could see individual buildings and their shapes."

What will we see on Pluto? Some researchers say we could spot icy

geysers. Some say we could see those surface deposits of organic material. Stern says simply, "There could be all kinds of surprises! It's a first exploration of a new kind of planet."

Heading far from home, "New Horizons is like Noah's Ark – our ship has two of everything, for backup," says Stern. "Two heaters, two computer systems, two of everything except the scientific instruments. And even those have capabilities to back each other up."

When New Horizons reaches Pluto it will have traveled 9 1/2 years – longer than any spacecraft has ever flown to reach its main target. To save power and reduce wear and tear, it hibernates much of the time. But all systems will be ready to spring into action upon arrival in 2015.

Mark your calendar.

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