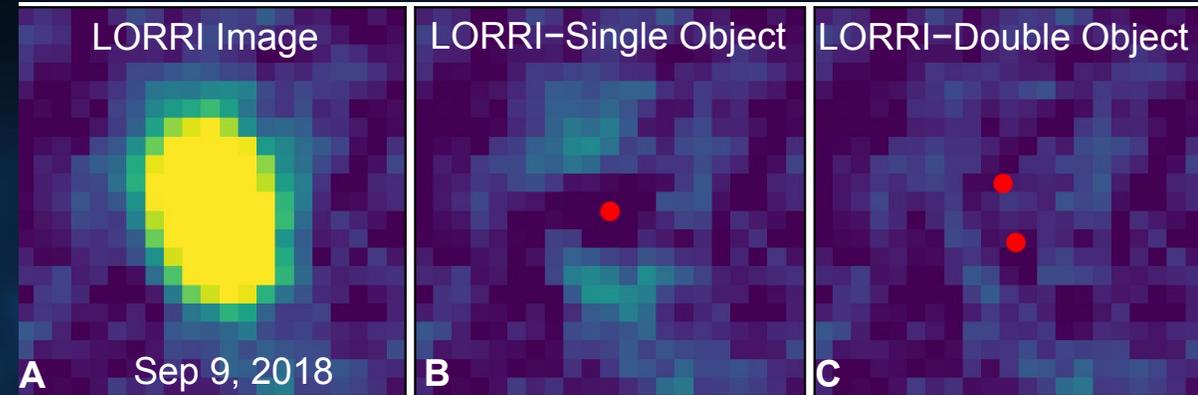


New Horizons Discovery of “Tight Twins” in the Kuiper Belt

The LORRI (Long Range Reconnaissance Imager) on NASA’s New Horizons spacecraft has found two pairs of Kuiper Belt Object (KBO) binaries – small bodies that orbit each other so closely that these “Tight Twins” cannot be seen as separate objects from any observatory on Earth or in Earth orbit.

- The Kuiper belt is a collection of icy bodies that orbit the Sun beyond Neptune. Binarity is common for relatively large KBOs (more than 60 miles across), but whether binaries also are common for smaller KBOs has long been an open question.
- New Horizons passed within 28 million miles of five KBOs, enabling measurements of binaries separated ten times closer than is possible to see from any observatory on Earth or in Earth orbit, including Hubble Space Telescope. LORRI images showed that two of those KBOs are binaries, with separations of about 100 miles.
- As a result, New Horizons has discovered that the high fraction of KBO binaries also applies to smaller KBOs that are closer together than is possible to observe from Earth with important implications for KBO formation studies.



Above: (A) The LORRI image of KBO 2011 JY₃₁ shows it to have an extended shape (yellow oval). (B) Subtracting a model that assumes the KBO is a single object (centered on the red dot) from the LORRI image leaves residual signal (lighter blue) above and below, indicating the model doesn’t fit well. (C) Subtracting a model comprised of two objects (centered on the two red dots) removes this residual, resulting in a much cleaner subtraction, indicating the KBO is two objects, i.e., it is a “Tight Twins” binary system comprised of two nearly equal size small objects that orbit each other every 2 days. These are the tightest KBO binaries ever discovered.