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The surface spot on KBO Haumea

Pedro Lacerda (1)

(1) Queen's University Belfast, UK (p.lacerda@qub.ac.uk)

Abstract

Kuiper belt object Haumea (formerly 2003 EL_{61}) is one of the most interesting bodies in the outer solar system. Approximately $2000 \times 1600 \times 1000$ km in size [1], it is one of the largest Kuiper belt objects (KBOs) and an unusually triaxial one for its size. Haumea is rotationally elongated due to its extremely fast 3.9-hour-period rotation[1, 2, 3]. Unlike other 1000 km-scale KBOs, which are coated in methane-ice, the surface of Haumea is covered in almost pure water ice [4, 5]. This feature is shared by only a few other KBOs [6, 7], all relatively close to Haumea in orbital space, and by the largest of the two satellites of Haumea [8], all thought to originate in a shattering collision a few Gyrs ago [9, 10]. The bulk density of Haumea, estimated around 2.5 g cm^{-3} [1, 2], suggests a rocky interior composition, different from the water-ice surface. Recently, Haumea has become the second KBO after Pluto to show evidence for surface features. A region darker and redder than the average surface of Haumea has been identified [3, 11, 12], the composition and origin of which remain unknown. I will discuss this recent finding and what it may tell us about Haumea.

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