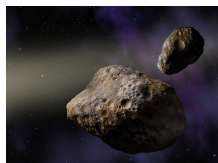


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Asteroids: the Oldest Bodies in the Solar System

New revolution in early solar system history understanding

It is widely known that ancient space rocks floating through the solar system are amongst the oldest bodies in the solar system. Meteorites found on Earth are proof for this. However, now astronomers using the Mauana Kea telescope in Hawaii claim to have discovered three asteroids that seem to be the oldest objects in the solar system, even older than the meteorites found on Earth. Jessica Sunshine of University of Maryland, the leader of the study, approximates the age of the newly found space rocks to about 4.55 billion years. Visible and infrared data revealed "asteroids that are not represented in our meteorite collection and which date from the earliest periods of the solar system", as Sunshine claimed. The asteroids will most likely be the primary target for the future space missions, in order to collect and retrieve them to Earth for study to create a better picture of the solar system in its first few millions of years of existence. The solar system started as a massive cloud of gas and dust that collapsed to create a central star, after which it was shaped into a solar nebula, or a disk of matter spinning around the Sun. Eventually, some of the heaviest elements, amongst which calcium and aluminum, began to condense into solid particles. With the passing of time, the disk of matter cooled further, until other lightest elements also began to condense, creating larger bodies, starting with comets, asteroids and finalizing the process with planets. Thus, although planetary astronomers know for some time that the oldest bodies in the solar system had to be calcium and aluminum rich, until now none was found. It is true that some of the ancient meteorites that were found on Earth contain traces of these two elements, but more calcium and aluminum rich bodies are needed to establish a clear age for the solar system. It all began in 1969, with the Allende meteorite, when scientists first found calcium and aluminum traces that confirmed the previous predictions related to the early properties of the condensates forming inside the proto-planetary disk of matter. Today, the finding of the three asteroids promise to initiate a new revolution into the understanding of the early days of the solar system's history, as Tim McCoy from the Smithsonian National Museum of Natural History thinks. Observations conducted with NASA's Infrared Telescope Facility at Mauana Kea, revealed concentrations of calcium-aluminum intrusions, or CAIS, up to two or three times higher than ever seen in a meteorite. "Thus it appears ancient asteroids have indeed survived, and we know where they are," said Sunshine. Previously, University of Maryland participated in solar system exploration missions such as Deep Impact, EPOXI, Dawn and NEAR. Additionally, Maryland engineers contributed to the build of multiple sensors for different spacecrafts such as Voyager, Cassini, Geotail and SAMPEX.