

KBO thermal evolution and relation with captured satellites

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Observations show that the trans-Neptunians are mostly confined within a region around the ecliptic, outwards from the orbit of Neptune (at 30 AU) to 50 AU. There are at least 70,000 "trans-Neptunians" with diameters larger than 100 km in this radial zone, and their number increases with the increasing power of the newly developed telescopes. The KBO region contains primitive bodies, perhaps among the most primitive objects of the solar system, as well as large bodies that possibly undergo a complex evolution. These bodies could be remnants of the solar system formation. However, the more we understand, the less we can simply accept this paradigm. In this presentation we will try to put in relation Kuiper belt objects with the solar system formation and try to foresee what could be their composition and evolution. Thermal models of bodies moving on Kuiper belt orbits have been developed to follow their evolution and differentiation and to test how the choice of different parameters affects their final status. At these distances from the Sun, the solar energy is very low and radiogenic heating shall be taken into account. Another source of energy are impacts, that can affect mostly the primordial life of these objects. Some of these objects, when removed from their original formation regions, can penetrate in the inner solar system being captured by Giant planets. The case of Phoebe, as a possible KBO is also discussed.