



## **Evolution scenarios and modern structure of KBO objects for different initial concentration of radiogenic heat sources**

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The commonly used today model of evolution of Kuiper Belt objects (KBO) assumes that object formation had happened by accretion of alumina-silicate matter and water ice particles from the periphery of proto-solar nebula onto a primary embryo having a similar chemical composition. The dynamics of body growth is influenced significantly by the processes of heat and mass transport. One of the main sources of heat during the evolution is radiogenic heating by the radionuclides  $^{26}\text{Al}$ ,  $^{238}\text{U}$ ,  $^{232}\text{Th}$ , and  $^{40}\text{K}$  imbedded into the matter.

Based on this model, we developed a model of evolution of KBO objects including the processes of heat and mass transport in a growing celestial body, as well as the processes of phase transitions of different kind of water and  $\text{CO}_2$  ices. The process of internal structure formation of a growing KBO object has been studied for different initial values of the concentration of radionuclides. We determined the values of the initial concentration of radionuclides which define the formation till the present moment in time of objects with heterogeneous internal structure (solid core – ice shell) or homogeneous ones consisting of a mixture of solid material and ice. The influence of growth speed on the internal structure of a growing object is also discussed.