

The Origin and Evolution of Trans-Neptunian Objects.

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Pluto was defined a trans-Neptunian objects.
Trans-Neptunian objects is larger than about 100km.
They are dynamically hot.
The relative velocity between the objects are much larger than the surface escape velocity.
Thus, they cannot grow to larger objects, like “planets”.
The dynamical excitation of the objects relate to the events in Solar system history.
The eccentricities of the objects in the 3:2 mean motion resonance with Neptune suggest Neptune outward migration.
The Neptune migration may transport the objects from the inner region.
Because Neptune cannot stop at the present position in the planetesimal disks that are larger than 30AU, the disk would be truncate for an early stellar encounter with 100AU.
The stellar encounter can form the high-inclination objects in trans-Neptunian objects.
Furthermore, collisions between these objects are destructive due to the high relative velocity.
The collisions produce small dust.
They would form the dust-debris disks.
The dust-debris disks are found around main sequence stars.
We discuss the similarity between trans-Neptunian objects and the dust-debris disks.