

FORMATION OF THE KUIPER BELT POPULATIONS BY MIGRATING PLANETS.

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The Kuiper belt consists of two main groups which are usually called the 'hot' and 'cold' populations. Very distinctive orbital and physical properties of these populations imply a different dynamical origin. While the 'hot' population was probably delivered to the Kuiper belt from the region interior to ~ 35 AU during the high-eccentricity phase of Neptune's migration [1], the explanation of the origin for the 'cold' population needs considering processes with much smaller dynamical excitation. We present results of numerical simulations for migration of low mass planets into the Kuiper belt region. The computations are based on using the N -body symplectic integrator [2]. Various profiles for the surface density of a planetesimal disk and masses of migrating planets are studied. It is shown that the reversion of the planetary migration near the edge of the planetesimal disk [3] plays an important role in the formation of the Kuiper belt structure. The migration of a planet of 0.4 – 0.5 Earth mass in the planetesimal disk with the outer edge near 50 AU reproduces well the main orbital features of the 'cold' Kuiper belt population. This work was supported by RFBR Grant 06-02-16512 and RFBR-Ural Grant 07-02-96002.

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