

The effects of Neptune's orbital expansion into a dynamically hot Kuiper Belt is examined numerically. In the model, a torque is applied to Neptune's orbit causing it to expand 9 AU outwards and into a stirred up Kuiper Belt composed of 10^4 massless particles having initial eccentricities $e < 0.1$. This system is integrated over the age of the Solar System, and our results confirm Chiang et. al's (2003) finding that migration into hot Kuiper Belt allows particles to get trapped at weak mean motion resonances like the 5:2. Indeed, our higher-resolution study of this scenario shows particles getting trapped at many of Neptune's weak resonances, including the 13:6, 9:4, 7:3, 12:5, 8:3, 11:4, 3:1, 7:2, 4:1, all of which reside in the $50 < a < 80$ AU zone. Many of these trapped particles have such high eccentricities that they also inhabit the domain usually identified as the Scattered Disk. Of course, gravitational scattering by Neptune also produces a Scattered Disk of particles, but most of these particles are removed over the age of the Solar System during subsequent encounters with the planets. Indeed, inspection of all particles with semimajor axes $50 < a < 80$ AU and $e > 0.25$ shows that about 90% were trapped at Neptune's migrating resonances, with only 10% actually being scattered by Neptune. These results may also provide an explanation for the 'extended' scattered disk of Gladman et. al. (2002), namely, that some of these KBOs were trapped at an exotic resonance with Neptune rather than scattered.

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