(NIMA), fitted to observations and determined a new ephemeris.

The difference between NIMA and JPL ephemerides is close to the offset at the date of observations but this difference then varies over time, according to a periodic one-year term and a secular term. For some objects, the offset method may remain accurate when the time between observations and occultation is short or when the offset's variations remain small. For other TNOs, the difference sharply increases making inaccurate predictions in the future. Consequently, new ephemerides should be used to make predictions. Finally, occultations also provide accurate astrometric positions and therefore new constraints on the TNO's motion. We analyze the contribution of previous occultations in the improvement of TNO'S ephemerides.

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SMALL ASTEROID FRAGMENTS IN EARTH-CROSSING ORBITS
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The meteorite that fell in Chelyabinsk, Russia, naturally made many people think it could be a smaller companion of the Asteroid 2012 DA14, which passed close to Earth on that same day. Some asteroid specialists discarded this hypothesis for two main reasons: The meteorite was too far away from the asteroid, because the collision happened sixteen hours before the asteroid passed close to Earth. Moreover, it was not traveling, similarly to asteroid DA14, from south to north. However the possibility of the meteorite being a companion of the Asteroid 2012 DA14 cannot be completely discarded. The Asteroid 2012 DA14, with a diameter of 45 meters, is very small. It can be considered an asteroids fragment, which is usually accompanied by other smaller fragments, scattered in space, practically in the same orbit and possibly being separated from each other by long distances. Assuming that 2012 DA14 is not an isolated asteroid, but the biggest remaining fragment from a previous impact, we developed a model to study the dynamics of an asteroid fragment, similar to DA14, and its companions, the smaller fragments. This dynamically interesting encounter with planet Earth is addressed and the orbital changes that could explain the Chelyabinsk event are discussed. As a result we

find that, there could be a collision of a meteorite before, during, or after the Asteroid 2012 DA14 passing by, the same way that happens with meteorite showers, which can last several days. Therefore, it would be very interesting to look for asteroid fragments also, close to the larger fragments, more easily found.

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ATLAS OF THE THREE BODY RESONANCES IN THE SOLAR SYSTEM
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Three body resonances (TBRs) between a massless particle with an arbitrary orbit and two planets P_1 and P_2 in circular coplanar orbits occur when the critical angle $\sigma = k_0\lambda_0 + k_1\lambda_1 + k_2\lambda_2 - (k_0 + k_1 + k_2)\varpi_0$ being k_i integers is oscillating over time. The approximate localization in semimajor axis of the TBRs taking arbitrary pairs of planets is very simple, specially if we ignore the secular motion of the perihelion and nodes of the perturbing planets. When these slow secular motions are taken into account each of the nominal three body resonances split in a family of resonances all them very near the nominal one. The challenge is to obtain the width, strength or whatever that give us the dynamical relevance of these TBRs. We propose an algorithm to numerically estimate the strength of arbitrary TBRs between two planets in circular coplanar orbits and a massless particle in an arbitrary orbit. This algorithm allowed us to obtain an atlas of the TBRs in the Solar System showing where are located and how strong are thousands of TBRs involving all the planets from 0 to 1000 au. Relevant results for the population of asteroids and transneptunian objects will be presented.

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DYNAMICAL EVOLUTION OF DIFFERENTIATED ASTEROID FAMILIES
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