digital filtering. Assuming that the resulting solution corresponds to a system with two degrees of freedom, surface of sections are obtained for different values of the averaged energy. These surfaces show a very regular behavior without traces of diffusion in a time span of 10^7 years. For small amplitude librations, it is possible to obtain regular orbits up to $e \sim 0.7$. Second, we numerically integrate the equations of motion of particles including all outer planets, the spatial case. In this case, there is a drastic reduction in the space of initial conditions leading to stable librations. The maximum eccentricity allowed by the perturbations due to Uranus is $e \sim 0.37$. At small eccentricities, the evolution is strongly related to the law of structure. The positive branch is stable and the negative is unstable due to the effect of the motion of $\varpi - \varpi_N$ and the overlap of the secular resonances ν_8 and ν_{18}. This explain the different behavior found by several authors for particles evolving at approximately $a \sim 40$ AU. Particles with initial libration centers located at the negative branch of the law of structure can be temporarily captured in σ-libration with Pluto-like values of e and i, but these orbits are not stable.

THE NUMBER OF OBJECTS IN THE ORIGINAL ASTEROID BELT

Ricardo Gil-Hutton[1,2]

Modeling the collisional evolution of Ceres and Vesta we found that a moderate mass depletion by a factor of 6 to 7 occurred in the asteroid zone after the end of the accretion phase. In addition, the model provides a mean value of 0.25 to 0.35 for the fraction of leftover impact energy available for further mechanical work after a collision and, running the model for asteroids larger than 200 km, it provides a mean angular momentum at the end of the accretion period of 0.108±0.044 $(GM^3R)^{\frac{1}{2}}$ which agrees very well with low collisional evolution objects orbiting in the depleted region at about 4.3 AU from the Sun.

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PHOTOMETRY OF FAMILY ASTEROIDS

Ricardo Gil-Hutton[1,2]

The evolution of the asteroid belt is related to the process of minor planet family creation by collisions. The study of the rotational properties of their members (rotation periods, orientation of spin axis, precession periods, etc.) allows the modeling of the creation process and its evolution. In this paper, we present photometry of asteroids 558 Carmen, 613 Ginevra and 1124 Stroobantia obtained during the last years at Estación Astronómica Dr. Carlos Ulrrico Cesco and CASLEO, San Juan, Argentina. The rotational periods deduced were 9.264 ± 0.005 hours for Carmen, 16.447 ± 0.009 hours for Ginevra and 16.393±0.006 hours for Stroobantia.

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PHOTOMETRIC OBSERVATIONS OF (2060) CHIRON

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The comet (2060) Chiron, a Centaur Object, has unique characteristics: activity as far as 17 AU from the Sun, an estimated diameter of nearly 200 km, and a chaotic orbit. Due to these characteristics and to the fact that in February 1996 it will reach perihelion; a systematic photometric monitoring of (2060) Chiron has been underway since early 1994.

We present the results of the observations realized between 1994 and 1995 at the Observatório do Pico-dos-Dias (OPD, Brazil) and the Observatoire de Haute-Provence (OHP, France). The first observing run, in 1994, was performed using a 1.6-m telescope of the OPD on the 8th of February. The 95 campaign was performed on several small observing runs between March and July, on a 0.6-m and a 1.2-m telescope of the OPD and OHP, respectively.

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