The background populations of asteroids in the Main Belt

Anderson O. Ribeiro(1), Fernando Roig(1), Jorge Carvano(1) & David Nesrvorny(2)

1 - Observatorio Nacional, Rio de Janeiro, Brasil

2 - Southwest Research Institute, Boulder CO, USA

Abstract: We analyze the existence of possible correlations between the orbital parameters and the taxonomy among the background populations of asteroids in the Main Belt. Our results indicate that there are weak correlations between the spectral slope and the orbital eccentricities and inclinations. This suggests that the primordial population of Main Belt asteroids would have been almost totally depleted during the early evolution of the Belt, and the population that we observe nowadays is the remnant of the subsequent collisional cascade provoked by the few large bodies that survived in that region of the Solar System.

keywords: Resonance, Celestial Mechanics

The effects a close passage of a cloud of particles by a large planet

Gomes, V. M.[1] and Prado, A.F.B.A.[2]

1 - INPE, Sao Jose dos Campos, Brazil, Vivian.gomes@uol.com.br
2 - INPE, Sao Jose dos Campos, Brazil, prado@dem.inpe.br

Abstract: In this research we study the passage of a cloud of particles near a celestial body. We mainly perform a study of the effects of this close approach in the three-dimensional space between a planet and a cloud of particles, with the goal of understanding the dispersion of this cloud in terms of the variations of velocity, energy, angular momentum and inclination. A numerical algorithm is developed and implemented to study this problem and then it is applied to a cloud of particles.

keywords: Particles, Celestial Mechanics

Reassessing the binary capture scenario of Triton

Érica C. Nogueira[1], Rodney S. Gomes[2], Ramon Brasse[3](OCA)

1- Observatório Nacional, Rio de Janeiro, Brazil, erica.nogueira@on.br

2- Observatório Nacional, Rio de Janeiro, Brazil

3 - OCA, França

Abstract: We have numerically integrated the orbits of the giant planets and a disk of planetesimals according to the Nice model and saved all close encounter data to use as initial conditions for capture simulations according to the model presented by Agnor and Hamilton. We find a probability of 25% to get Triton from the Agnor and Hamilton model if all Tritons are in equal-mass binaries.

keywords: Triton, Celestial Mechanics