Prediction, observation and analysis of asteroid's close encounters

Morano Fernandez J.A.[1], **Lopez Garcia A.**[2], **Pastor Erade, J.**[3]

Masses of large asteroids are needed for improving the modern planetary ephemerides. As the asteroids are so small, the best method to obtain their masses is through observations of individual encounters between pairs of asteroids. 239 minor planets with diameter bigger than 100 km have been selected for mass determination through close encounters with numbered and unnumbered asteroids. The orbits of 11000 numbered and 35000 unnumbered minor planets in the time interval 1985-2010 have been integrated and rectangular co-ordinates stored every ten days. For each one of the 239 large asteroids, a filter is applied to select objects with some possibilities of a real encounter. Close encounters are detected from distance and relative velocity values between both asteroids and several parameters are calculated for each encounter. The possibility of observing the asteroids at the epoch of their encounter is analysed. The relation between the accuracy in the mass determination and data distribution is also investigated.