# DETERMINATION OF ASTEROID MASSES: (1) CERES

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We have made a comprehensive analysis of the most favourable close encounters of asteroids with the largest asteroid (1) Ceres, in order to determine the mass of Ceres from the changes it imposes in the motion of the encountered bodies. We took into account only the well observed bodies (including some already used by the previous authors) which approached Ceres in the last 25 years.

All the available observations were included in orbital fits, providing estimates of the observational errors and of the sensitivity of the final value of the mass with respect to uncertainty in each of the comprised observations. The observations of particular importance for a succesfull and reliable mass determination are identified and the need for their remeasurement and/or rereduction emphasized.

Two methods (semianalytical and numerical) were employed in these analyses, the results being compared both for the reliability and for the efficiency of their derivation. The robustness of results was tested against the assumed errors in the orbital elements, and the associated covariance matrices are derived.