A Method for Asteroid Mass Determination

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Abstract:

A purely numerical method for determination of asteroid masses is presented. For the derivation of the mass use is made of asteroid close encounters, in particular those very close.

The procedure of the mass determination is based on finding a perturbed orbit only by means of the observations collected after close encounter or only by those collected before the encounter, and of subseqent fitting of the observations on the other side of the close encounter by setting the trial values for the mass of a perturbing body and linking the pre- and post-encounter orbits. The resulting mass is obtained as one which gives the minimum O-C residuals in the RMS sense.