ON JUPITER OUTER SATELLITES COLLISIONS AND CAPTURE HISTORY

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The problem of origin of outer irregular satellites of large planets is considered. However the capture way of their origin most probable, there is not detail theory. There are a number of irregular satellites, discovered in recent time. It gives an ability to investigate the statistics of orbital interaction and try to reconstruct real collision history of these objects. It may be considered as a first step on road to the construction of theory of origin of the abundant class of irregular satellites.

The method of investigations of genetic relations between minor bodies successfully applied in our previous works [1]. On the other hand, Nesvorny et al [2] research evolution of orbit orientations in asteroid families and prove fact of recent catastrophic destruction in asteroid main belt. It is naturally to apply these two ideas to irregular satellites orbits for determination their possible catastrophic destruction epoch.

As a result, it is shown, that possible catastrophic breakup in Jovian irregular satellite system could take place about 140 years ago, and this process could be multistage.

References: