

L02a Close approach statistics of near-Earth asteroids

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The orbits of all known near-Earth asteroids (NEAs) are integrated in order to generate data on close approaches of NEAs to the Earth. In this way, distributions of the directions and speeds of impacting NEAs can be calculated. The close approach data are used to contrast appropriate observing strategies for two purposes: firstly, for long term detection programmes to increase the overall database on potentially hazardous NEAs, and secondly, for detection of previously unknown NEAs on collision trajectories, just days to weeks before impact. The latter is more likely to apply to smaller (~ 100 metre, say) objects, which may be too faint to be seen by most telescopes until quite close to the Earth (days to weeks before a collision). As smaller objects are more numerous, it is more likely that an impact of a smaller object will occur before the next impact of a large (kilometre, say) object. In this study, the statistical data on impact directions and speeds are combined with estimates of the observability based on the size of the NEAs.