

A SURVEY OF POSSIBLE MISSIONS TO THE PERIODIC COMETS IN THE INTERVAL 1974-2010

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ABSTRACT

In order to survey the mission possibilities for the short period comets two catalogues are developed. In the first the physical and pertinent orbital characteristics are given for 65 short period comets. Since missions for short period comets are for the most part expected to utilize arrivals near perihelion at a time when the comet is comparatively active, the second catalogue is one containing the predicted perihelia for each of the 65 comets between 1974 and 2010. Included is enough geometry to indicate feasibility of Earth-based observation and sighting within 100 days of perihelion.

Mission selection criteria and trajectory requirements are discussed with the aim of providing the background for categorizing the possibilities. The comets are then divided essentially on the basis of size and activity into three groups of interest from the data in the first catalogue: primary, secondary and low interest.

The perihelia are separated into two groups of interest: satisfactory and not satisfactory, essentially on the basis of Earth-comet distance.

Thus there are obtained three tables of targets for missions to the short period comets, the first of which, for primary interest comets with satisfactory perihelia, contains 57 cases and is the main shopping list for these missions. There are 43 cases in the second table for the secondary interest comets and 42 in the third for the low interest comets. The final table presented lists chronologically the 51 perihelia for which the comet is predicted to pass within .75 AU of the Earth.