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MONTE CARLO SIMULATIONS OF OORT CLOUD COMETS AND THE ORIGIN OF COMET POPULATIONS

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Since the direct integration of millions of small particles is very time consuming, we have developed an efficient Monte Carlo method by which we can evaluate the evolution of numerous comets. Here the method is presented and the comparison with previous simulations has been carried out.

There is a good agreement with the earlier calculations. Since there are many poorly known evolutional parameters of comets we have investigated the influence of these parameters on the final populations and inclination distributions. Also possible effects of secular variations and time-evolution have been considered.

Finally, we obtain via capture from the Oort cloud the population and inclination distribution of comets whose orbits are similar to the supposed Kuiper belt objects and compare the observed and calculated populations and orbital parameter distributions.