CCD Astrometry of Saturn's satellites 1990-94 from La Palma

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We have obtained more than 1200 measurements of the positions of the major satellites of Saturn during the apparitions of 1990, 1991, 1993 and 1994 using CCD detectors attached to the 1-metre Jacobus Kapteyn Telescope on La Palma. Comparison of the observations with the best current orbital models shows that it is possible to attain root-mean-square residuals as small as 0.08 arc-seconds. In this paper, we discuss the problems associated with the use of CCD devices for satellite astrometry and we propose an observing strategy based upon our experience with the CCD technology.