Rotational Properties of Comet 8P/Tuttle. L. M. Woodney[1], D. G. Schleicher[2] and A. N. Bair [2], [1]California State University, San Bernardino (5500 University Pkwy, San Bernardino, CA 92407), [2]Lowell Observatory (1400 W Mars Hill Rd, Flagstaff, AZ 86001).

In the winter of 2007/2008 Comet 8P/Tuttle had its first good apparition since 1980. We report here on our CCD observations of the comet made over 9 nights in December and January with the Lowell Observatory Hall 1.1-m Telescope at Anderson Mesa, Arizona, as well as a dozen nights of conventional photometer observations from both the Hall telescope and the 0.6-m Lowell telescope located at Perth Observatory. The Hale-Bopp comet filter set was used, along with a Cousins R-band filter for additional imaging. The photometry data confirm results from 1980 that Tuttle, a Halley-type object, has very little dust in its coma. There is also evidence that Tuttle exhibits a strong seasonal variation. The imaging revealed a strong, single spiral jet in the gas. Three successive arcs of the jet approximately centered in the sunward direction and extending more than 180 degrees in extent are clear in CN, while the innermost arc is seen in OH, NH, C_2 and C_3.

We have used measurements of the outward motion of the CN arcs to determine the rotational period of the comet. Using data from individual observing runs we find a period of 5.73 ± 0.02 hr for Dec 14-17, 5.73 ± 0.03 hr for Dec 29-31 and 5.71 ± 0.03 hr for Jan 14-15. Thus, the rotational period is stable over the 1-month time-span over which we observed it. Of particular note is that we have over 6 hours of data on the nights of Dec 15, 16, and 31, in each case allowing us to observe the outward motion of the arcs over an entire cycle, and also in each case the morphology clearly repeats in about 5.7 hours, eliminating the possibility that this period is an alias. The motion is consistent with a single source region and has a projected outward velocity flow of 1.1 km/sec in the sunward direction.

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