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Obliquity, precession rate, and nutation coefficients of 67/P Churyumov-Gerasimenko

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We determine the important rotational parameters (obliquity, precession rate, and nutation coefficients) for 67/P Churyumov-Gerasimenko. For our study we derive a new gravity field solution for 67/P based on the polyhedron shape model 67P/C-G (OSIRIS) together with the principal moments of inertia of the comet assuming constant density. In addition, we derive mean orbital elements for 67/P, and make use of an averaged theory of rotational dynamics to calculate the rotational parameters. Our results are supported by means of numerical simulations.