`lcgenerator` – how to use it

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This program computes the disk-integrated brightness of *convex* asteroid models. It can be used for verifying results obtained by `convexinv` or for computing lightcurves for given epochs. Do not use it unless you are familiar with all input/output file formats (see the manual for `convexinv`).

syntax (Unix):

```
cat lcs | lcgenerator [-v] input_par shape out_lcs
```

`-v` verbose mode

Input lightcurves (`lcs`)

The input file contains epochs and the corresponding geometry, it is read from the standard input. The format is the same as for `convexinv`. Although brightness values from this file are not used in the code, this format enables one to use the same lightcurve file for creating a model and for checking results.

Note that output lightcurves from `convexinv` or `conjgrad` may be slightly different from those from `lcgenerator`. The difference is caused by the dark facet and by Minkowski conversion.

Input parameters (`input_par`)

The format of this file is the same as that of the parameters file in `convexinv` – the first line contains asteroid's rotation parameters: ecliptic pole coordinates λ, β (deg), and the rotation period P (hours). The second line contains zero time t_0 (JD) and the initial rotation angle ϕ_0 (deg). Then phase function parameters (the third line) and the Lambertian part of the scattering model (the fourth line) follow. See instructions for `convexinv` for more details.

Input shape (`shape`)

A polyhedral *convex* shape model with triangular surface facets. The format is the same as for the output file from `standardtri`.

Output lightcurves (`out_lcs`)

The computed brightness in *intensity* units is stored in this file. The file contains a list of brightness values in the same order as in the input lightcurve file. Individual lightcurves are reduced do have a unit mean if they are relative.

Further information

Look at `http://www.rni.helsinki.fi/~mjk/asteroids.html`, read Kaasalainen and Torppa (2001), Kaasalainen et al. (2001), and FAQ.

Updated versions may appear at `http://astro.troja.mff.cuni.cz/projects/asteroids3D`. You can also download published models and corresponding rotation parameters. Please keep in mind that `lcgenerator` does not account for shadowing, so it gives correct results only for *convex* objects.