

This archive contains an ANSI C implementation of the algorithm for calculating of the light curve. Currently, the algorithm is implemented for the linear and quadratic limb-darkening law. The decreasing of the flux of the binary system when radius and brightness at the center of eclipsed star equal unit, radius of the second (eclipsing) component equal r and the distance between centers of disks equal δ :

$$\Delta L(\delta, r) = \Delta L_0(\delta, r) + \Lambda_l[\Delta L_1(\delta, r) - \Delta L_0(\delta, r)] + \Lambda_q[2\Delta L_1(\delta, r) - \Delta L_0(\delta, r) - \Delta L_2(\delta, r)]$$

Here Λ_l is a linear limb-darkening coefficient, Λ_q is a quadratic limb-darkening coefficient. The header file "lustre.h" contain a prototype (headers) of the nine functions with two arguments each: L0, D1L0, D2L0, L1, D1L1, D2L1, L2, D1L2, D2L2. First argument is δ , second argument is r . LX correspond to ΔL_x , prefix D1 correspond to derivative with respect to the first argument (δ), prefix D2 correspond to derivative with respect to the second argument (r). The module "lustre.c" contains the implementation of these functions.

In addition, the archive contains points and weights used in the application of the Gaussian quadrature formula (in the form of C arrays in the file "gaussp.c"):

$$\int_0^1 h(t)\omega(t)dt \approx \sum_{l=1}^N w_l h(t_l).$$

Here $N = 14$.

When $\omega(t) = 1$, nodes t_l correspond to array "nodes_Legendre", and weights w_l correspond to array "weights_Legendre".

When $\omega(t) = -\sqrt{1-t}\ln(1-t)$, nodes t_l correspond to array "nodes_SqLn", and weights w_l correspond to array "weights_SqLn".

When $\omega(t) = \sqrt{1-t}$, nodes t_l correspond to array "nodes_Jacobi1d2", and weights w_l correspond to array "weights_Jacobi1d2".

When $\omega(t) = (1-t)^{1/4}$, nodes t_l correspond to array "nodes_Jacobi1d4", and weights w_l correspond to array "weights_Jacobi1d4".

When $\omega(t) = (1-t)^{3/4}$, nodes t_l correspond to array "nodes_Jacobi3d4", and weights w_l correspond to array "weights_Jacobi3d4".