This archive contains an ANSI C implementation of the algorithm for calculating of the decreasing of the flux. Currently, the algorithm is implemented for the linear, quadratic and square-root 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 $\delta$:

$$\Delta L(\delta,r) = \Delta L_0(\delta,r) + \Lambda_l[\Delta L_1(\delta,r) - \Delta L_0(\delta,r)] + \Lambda_q[2\Delta L_1(\delta,r) - \Delta L_0(\delta,r) - \Delta L_2(\delta,r)] + \\ + \Lambda_Q[\Delta L_3(\delta,r) - \Delta L_0(\delta,r)] \quad (1)$$

Here $\Lambda_l$ is a linear limb-darkening coefficient, $\Lambda_q$ is a quadratic limb-darkening coefficient, $\Lambda_Q$ is a square-root limb-darkening coefficient. The header file "lustre.h"contain a prototype (headers) of the nine functions with two arguments each: L0, D1L0, D2L0, D11L0, D12L0, D22L0, L1, D1L1, D2L1, D11L1, D12L1, D22L1, L2, D1L2, D2L2, D11L2, D12L2, D22L2, L3, D1L3, D2L3. First argument is $\delta$, second argument is $r$.
LX correspond to $\Delta L_x$.
Prefix D1 correspond to derivative with respect to the first argument, $\frac{\partial}{\partial\delta}$.
Prefix D2 correspond to derivative with respect to the second argument, $\frac{\partial}{\partial r}$.
Prefix D11 correspond to second derivative with respect to first argument, $\frac{\partial^2}{\partial\delta^2}$.
Prefix D12 correspond to second derivative with respect to first and second argument, $\frac{\partial^2}{\partial\delta\partial r}$.
Prefix D22 correspond to second derivative with respect to second argument, $\frac{\partial^2}{\partial r^2}$.

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.h"):

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

Here $N = 16$.
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".