Exercise no.1 Goniophotometer

Measurement of directional light distribution characteristics of luminaire

Make a table of measured corrected values of illuminance *E* (*lx*) and calculated values of luminous intensity *I* (*cd*). Construct the curves of spatial distribution of luminous intensity for the longitudinal and transverse coordinates of the luminaire (polar diagram) from the calculated values of the luminous intensity. At the linear type luminaires (luminaires with a fluorescent tubes) the luminous intensity distribution curve in longitudinal plane is often similar to the circle.

1) Measurement at the longitudinal axis of the luminaire
   (photometric plane C0/C180, see fig. 1)

   a) Fasten the luminaire on goniophotometer so that the center of the luminous area lying on the axis of the rotation of the goniophotometer arm and a path of the photodiode
   b) Rotate the luminaire around the vertical axis so that the longitudinal axis of the luminaire would be in a path of the goniophotometer arm.
   c) Power cables of the luminaire panel connect with the regulatory voltage source at the laboratory table (ready).
   d) Turn on the laboratory table and the switch of the voltage stabilizer. By the regulatory voltage source set the rated voltage of the luminaire. Leave the luminaire heat up approximately 10min.
   e) Run program Gofosoft4, connect the control unit of stepper motor and luxmeter via a serial interface to the PC („Open ports“), turn on the power („Power“) and calibrate the incremental position encoder of the goniophotometer arm („Find zero angle“).
   f) With the goniophotometer control panel („Measuring sequence“) set the start position of the goniophotometer arm -110° („From“) and the end position of goniophotometer arm 110° („To“). Set the angle of measuring step 5° („Step“) and run the automatic measurement („Start“). Measured values of illuminance *E [lx]* recalculate to the values of intensity $I = E \cdot k \cdot r^2$ *[cd]*. Length of the arm r = 2 m; read the correction factor of the luxmeter read from the calibration sheet of the luxmeter.
   g) Do not turn the luminaire off!!! Heating of the light source would have to be repeated.

2) Measurement at the transverse axis of the luminaire
   (photometric plane C90/C270, see fig. 1)

   Turn the luminaire by 90° around the vertical axis and do the same measurement as in point 1f).

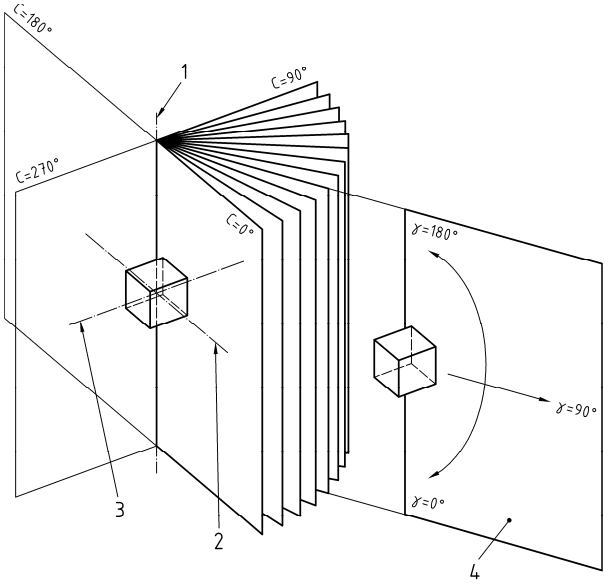

Fig.1:
Photometric coordinates C-planes

Legend
1 first axis, beam axis
2 second axis
3 third axis
4 C-plane