

## 7.1 Gaussian beam

### Matlab program

The [program](#) serves to computing and depicting parameters of Gaussian beam when passing an optical element.

First, the path of Matlab has to be directed to the folder **Gauss**. The program is run via the m-file `gauss.m`. Passing the introductory window, the following input parameters are required to be typed: wavelength, radius of the beam, and radius of the equiphase surface. Then, the type of the optical element has to be chosen from a combo. Following types are at our disposal:

- Free space
- Planar mirror
- Spherical mirror
- Planar boundary
- Spherical boundary

For each of those elements, supplementary parameters have to be determined. Among those parameters, the distance behind the optical element, where the radius of the equiphase surface and the radius of the beam are going to be observed, has to be given. Then, the graphical representation of the beam is displayed, and in the table, the beam radius  $R_2$  and the equiphase surface radius  $W_2$  depending on the distance  $z$  from the optical element are listed. Moreover, the button for finishing the program () and for entering new parameters are shown.