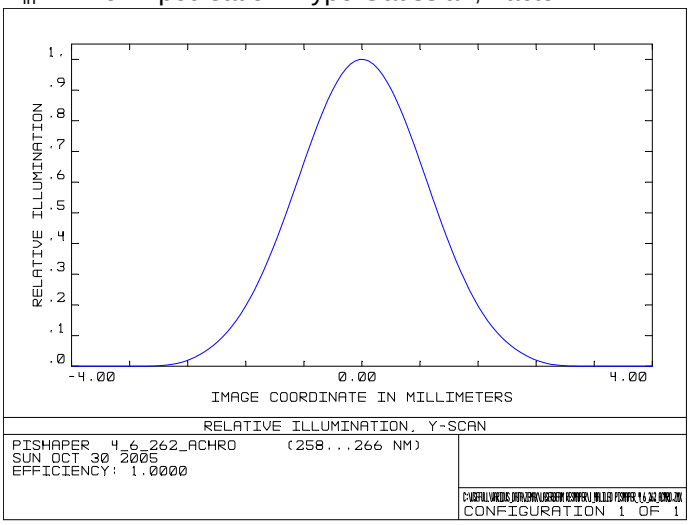
Behaviour of πShaper 4_6_262 when changing the shape of input beam

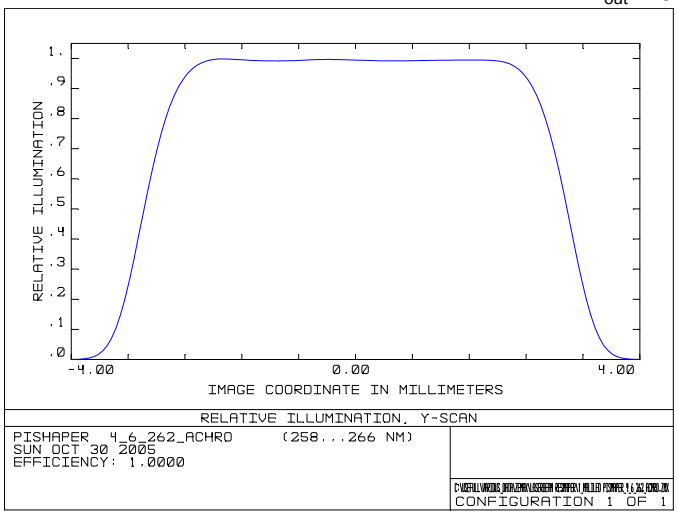
Left Column – data for input beam:

- Diameter for $1/e^2$ intensity level,
- Gaussian Apodisation of Factor=1 corresponds to TEM_{00} beam of $M^2=1$,
- Diameter is adjusted to get uniform intensity profile at output of πShaper.

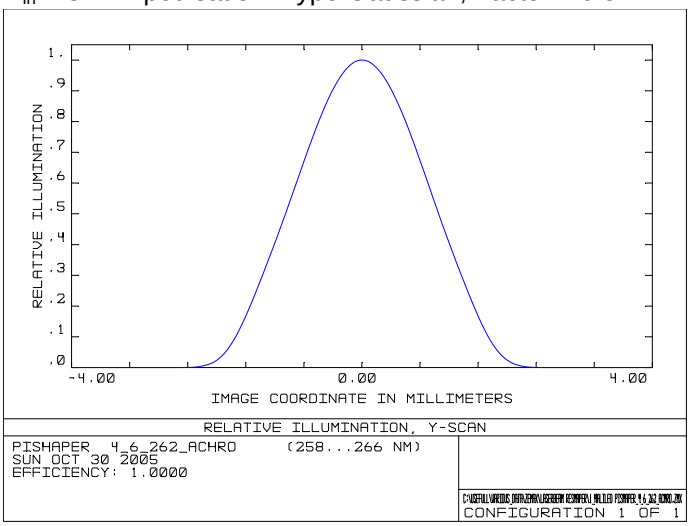
Right Column – data for output beam (Full Width at Half Intensity)

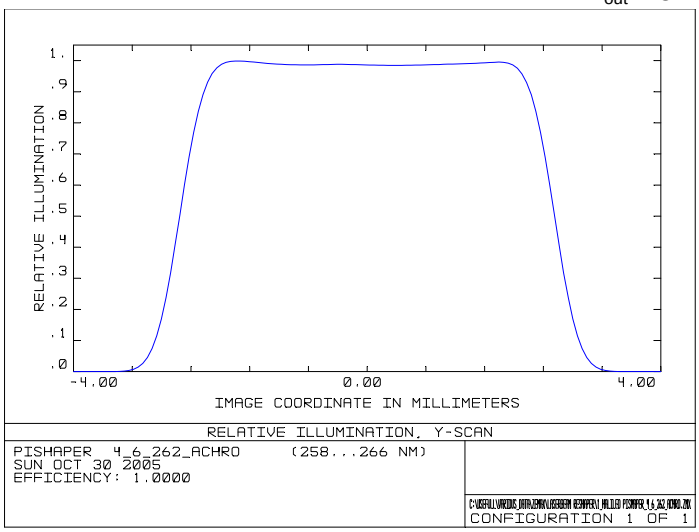
D_{in} = 4.75 Apodisation: Type Gaussian, Factor = 1 D_{out} = 6.0



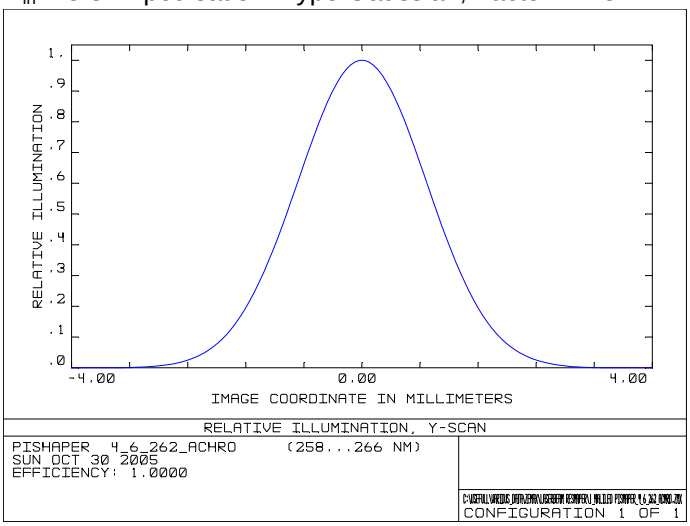


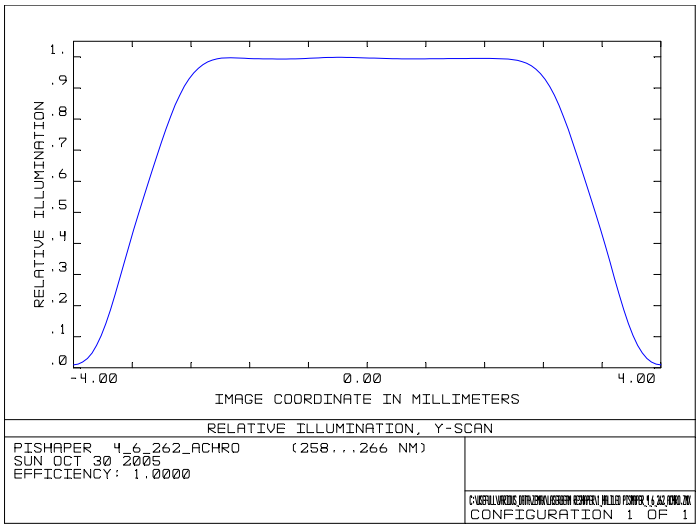
D_{in} = 3.4 Apodisation: Type Gaussian, Factor = 0.5 D_{out} = 5.1





D_{in} = 5.8 Apodisation: Type Gaussian, Factor = 1.5 D_{out} =6.2





Apodisation Type
By default, the pupil is always illuminated uniformly. However, there are times when the pupil should have a non-uniform illumination. For this purpose, ZEMAX supports pupil Apodisation, which is a variation of amplitude over the pupil. Three types of pupil Apodisation are supported: uniform, Gaussian, and tangential. Uniform means rays are distributed uniformly over the entrance pupil, simulating uniform illumination. Gaussian Apodisation imparts an amplitude variation over the pupil that is Gaussian in form. The Apodisation factor refers to the rate of decrease of the beam amplitude as a function of radial pupil coordinate. The beam amplitude is normalized to unity at the center of the pupil. The amplitude at other points in the entrance pupil is given by

$$A(\rho) = \exp(-G\rho^2),$$

where G is the Apodisation factor and ρ is the normalized pupil coordinate. If the Apodisation factor is zero, then the pupil illumination is uniform. If the Apodisation factor is 1.0, then the beam amplitude has fallen to the 1 over e point at the edge of the entrance pupil (which means the intensity has fallen to the 1 over e squared point, about 13% of the peak). The Apodisation factor can be any number greater than or equal to 0.0.