

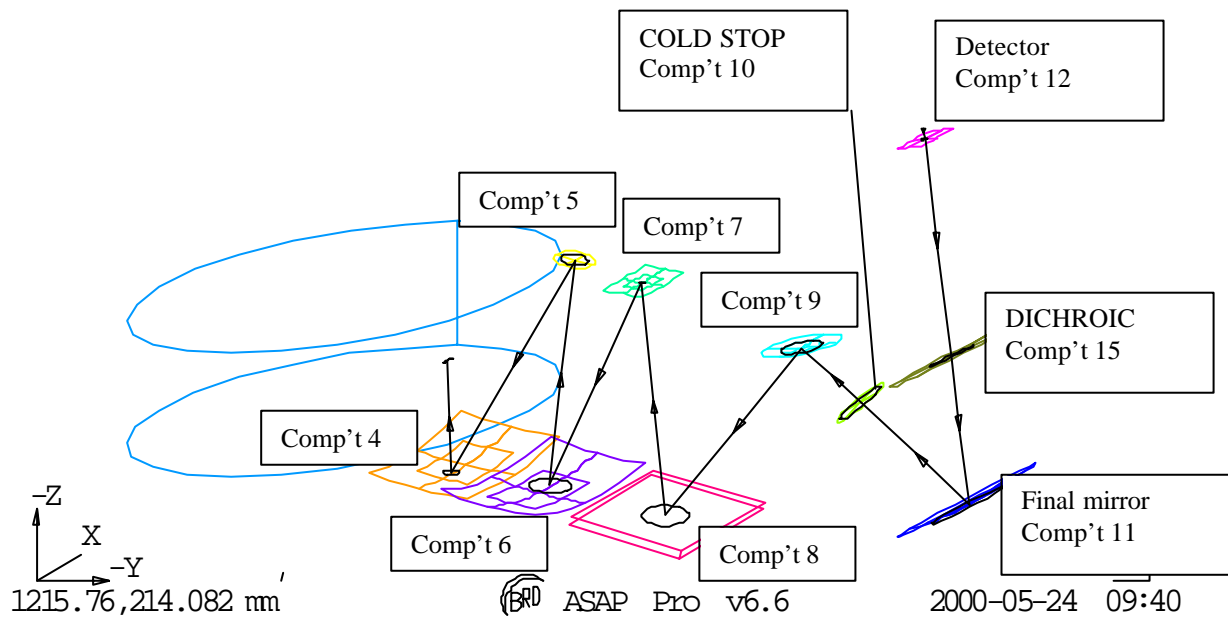
Beam patterns have been shown previously for other optical designs & detector options, most recently in RAL-N-0101.01. This note accompanies a similar one for the FTS (RAL-N-0361) in which those beam patterns are given, as well as more background to detector design & calculations.

These patterns are for use in testing the size of the optics with regard to beam clipping.

Optical design.

The design is that of file bolpht153.inr, shown in the 'quick-look' plot in fig.1.

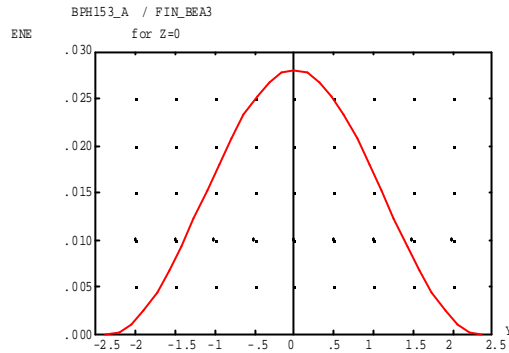
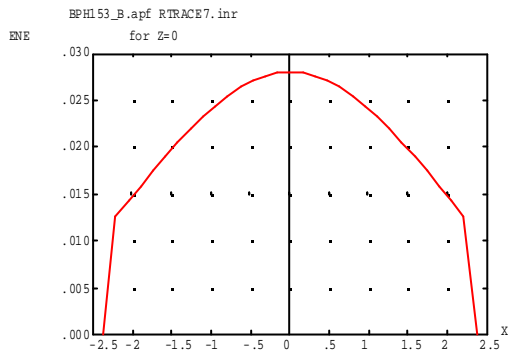
Gaussian beam, energy contours at intensity= $1/e^2 = 13.5\%$ 505.159, -753.986



Gaussian contour appears as black ring in each component.
File: BPH153_B.doc

Detector model.

The smooth-wall horn TE11 mode is asymmetric, with 2-fold symmetry, so there are 2 principal orientations to describe. Therefore 2 sets of plots are shown, in intensity sections. *In all plots lateral position is in MM.*



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DETECTOR

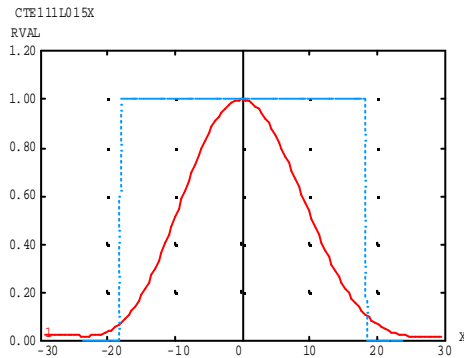
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The detector is sized at aperture = $2F\lambda - 0.1$, where $\lambda=0.5\text{mm}$ here, as per N000 316.

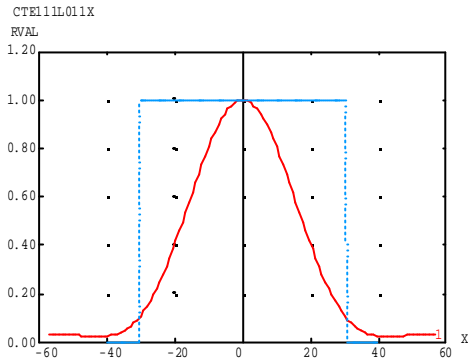
Beam patterns.

The beam is reverse propagated from the detector outwards. In the following series of plots the component number (as per the above figure) is identified in the plot title & in the caption. The plots are profiles, in the X-direction (perpendicular to symmetry plane) only. There are two principal choices for the orientation the horn with respect to its asymmetry; for the horn X-axis above either parallel or perpendicular to the system X-axis of fig.1. At most components both cases are shown, as is the top-hat profile for the geometric beam.



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DICHROIC. Component 15.

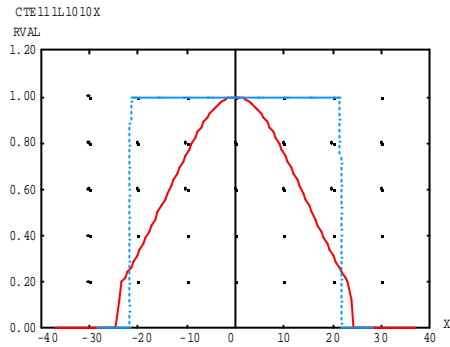
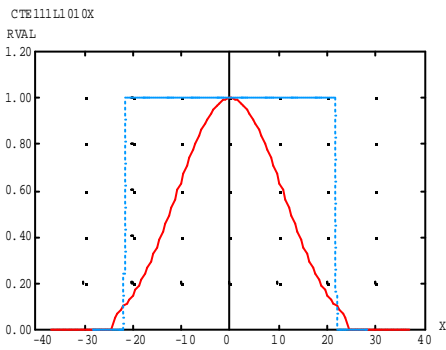
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FINAL FOCUS MIRROR, Comp't 11



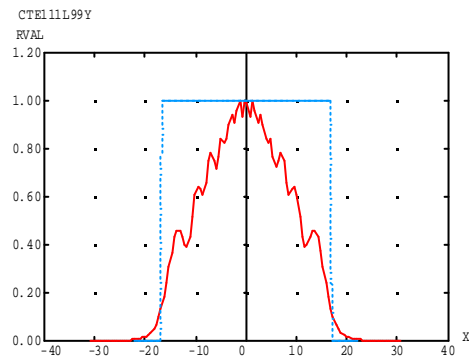
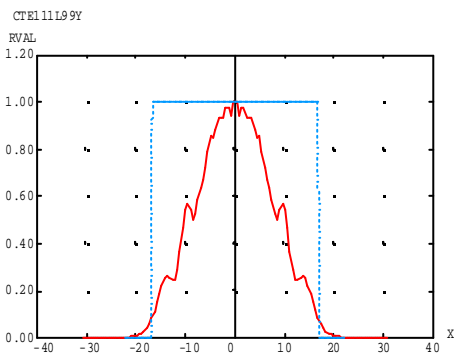
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COLD STOP Comp't 10.



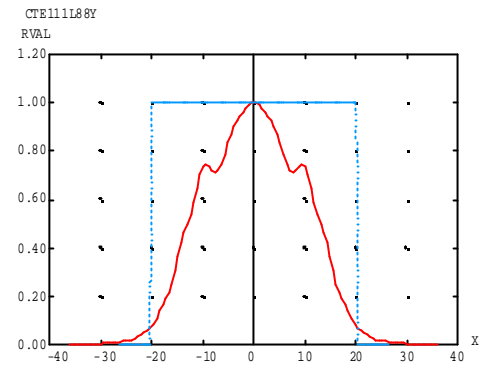
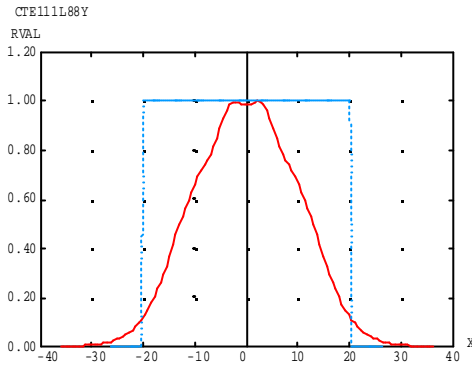
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ASAP Pro v6.6

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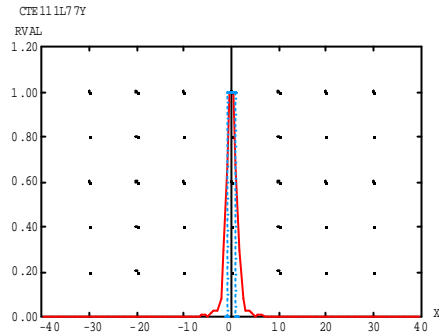
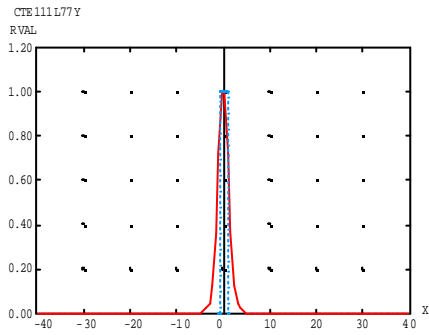
Comp't 9



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Comp't 8.

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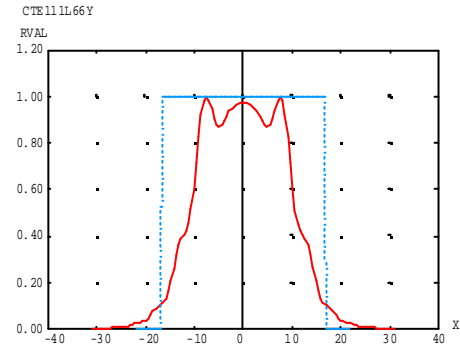
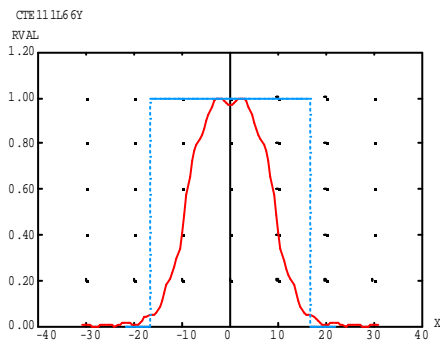
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ASAP Pro v6.6
Comp't 7 Field stop

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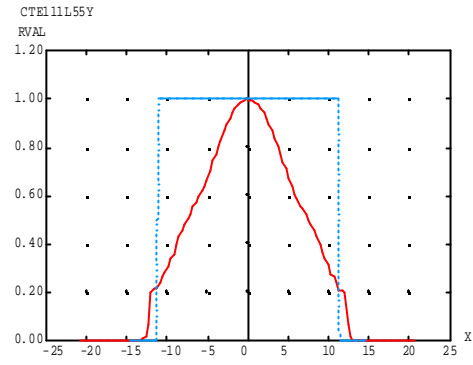
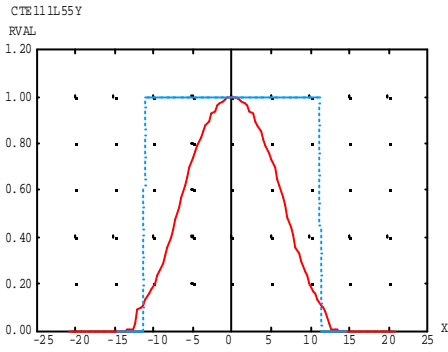
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ASAP Pro v6.6
Comp't 6

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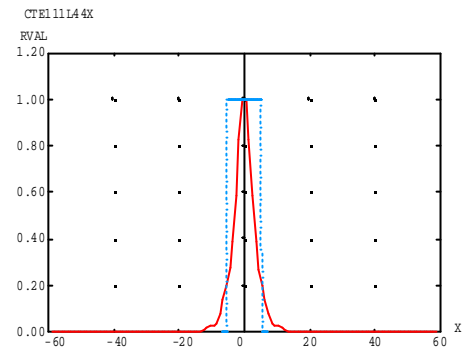
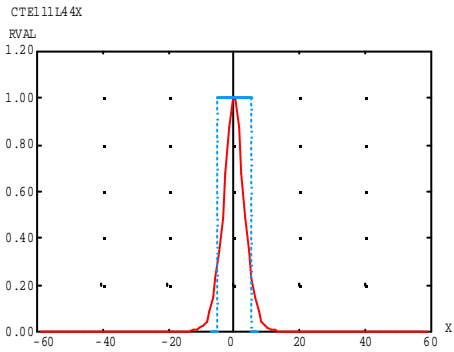
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Comp't 5 Chopper pupil.



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Comp't 4.