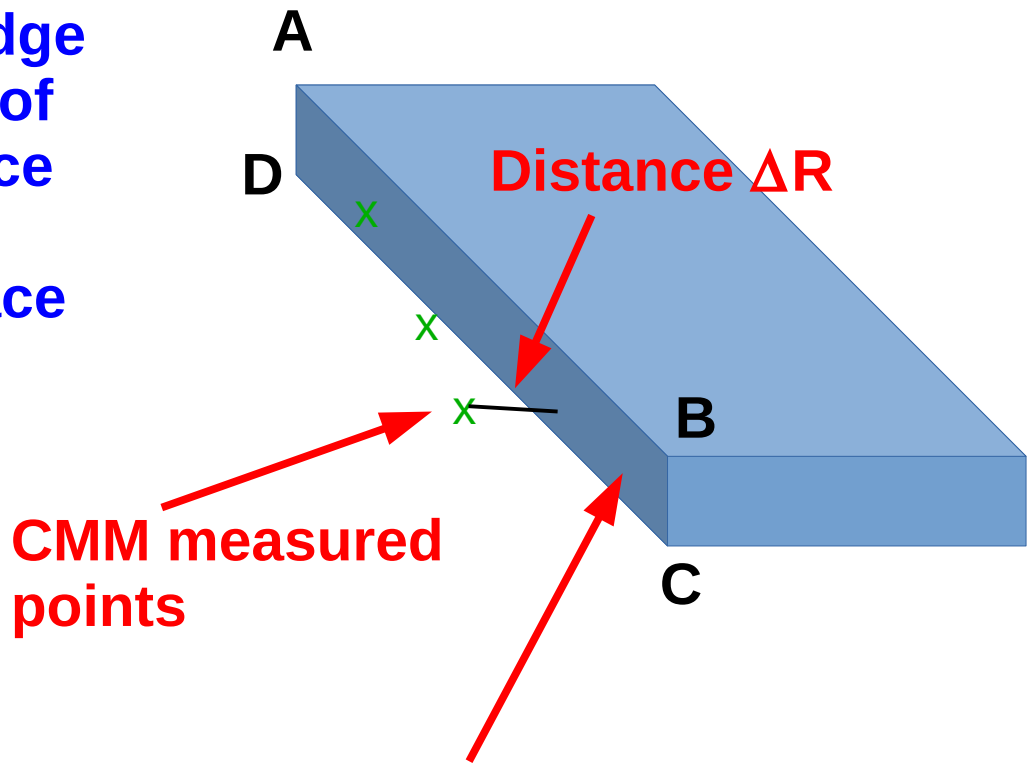
Analysis of the mirror edges

1. Use the 4 vertices of the mirror edge from CAD to calculate the equation of the plane containing the ideal surface
2. Calculate the distance of each measured point from the ideal surface
3. Plot, get mean and RMS
4. Measured data taken on the two skins of the mirror (front and back)



Equation of the plane

$$\vec{N}\left(\vec{P}-\vec{P}_0\right)=0$$

$\vec{N}$ **is the normal to the plane**

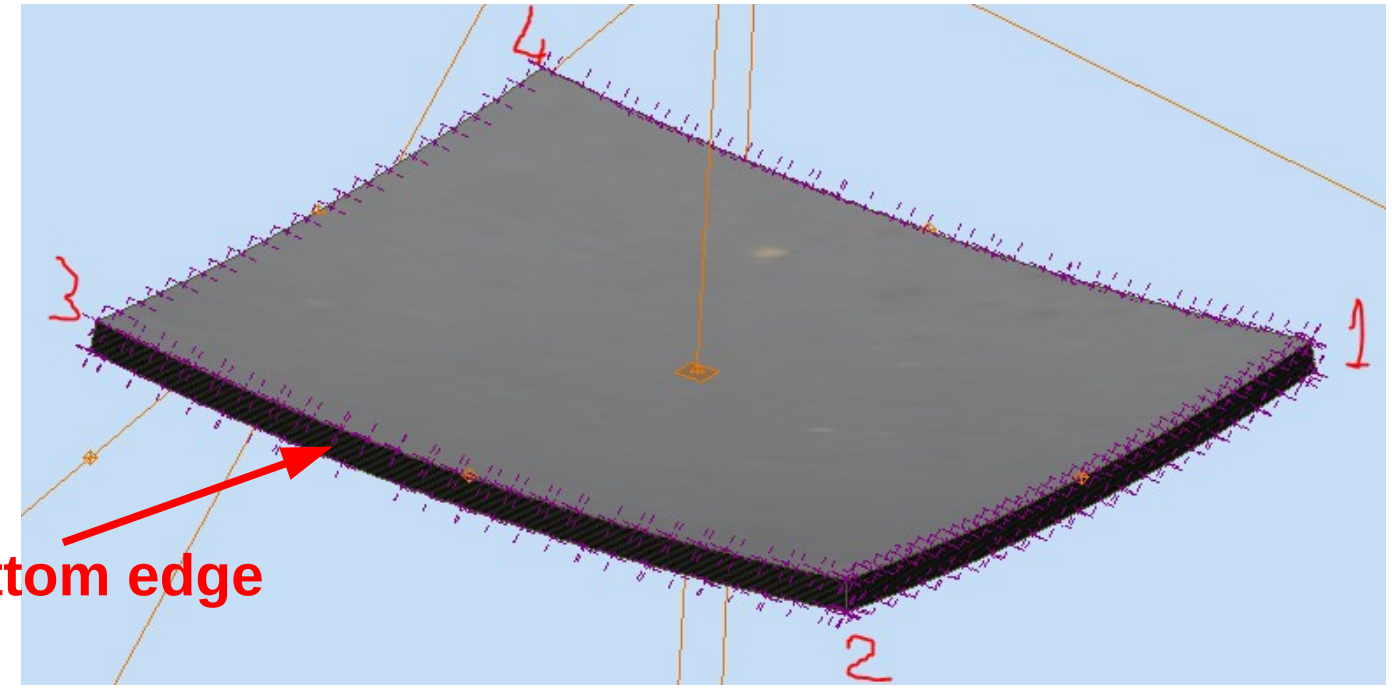
$\vec{P}_0$ **is a fixed point on the plane**

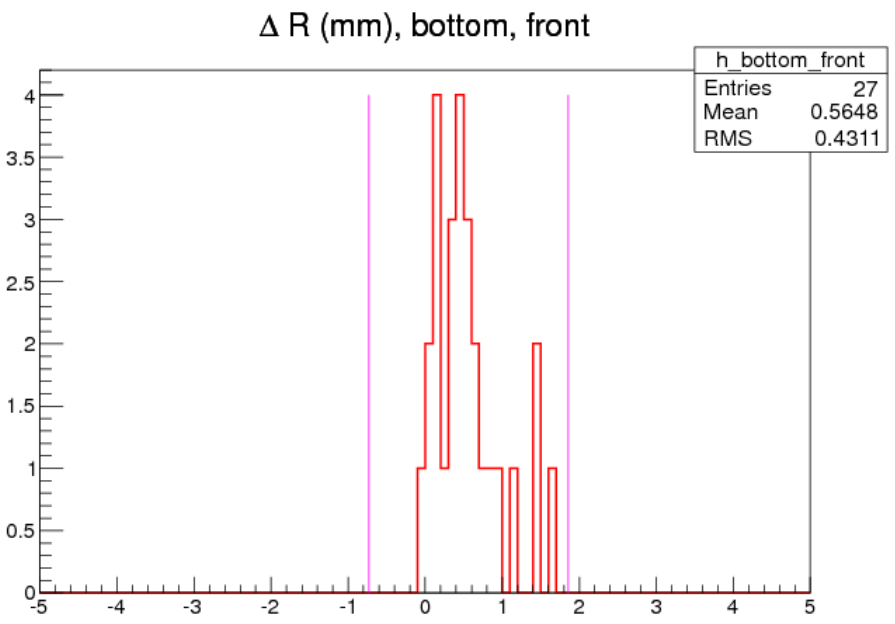
Distance of a point Q from the plane: $d=\vec{N}\left(\vec{Q}-\vec{P}_0\right)$

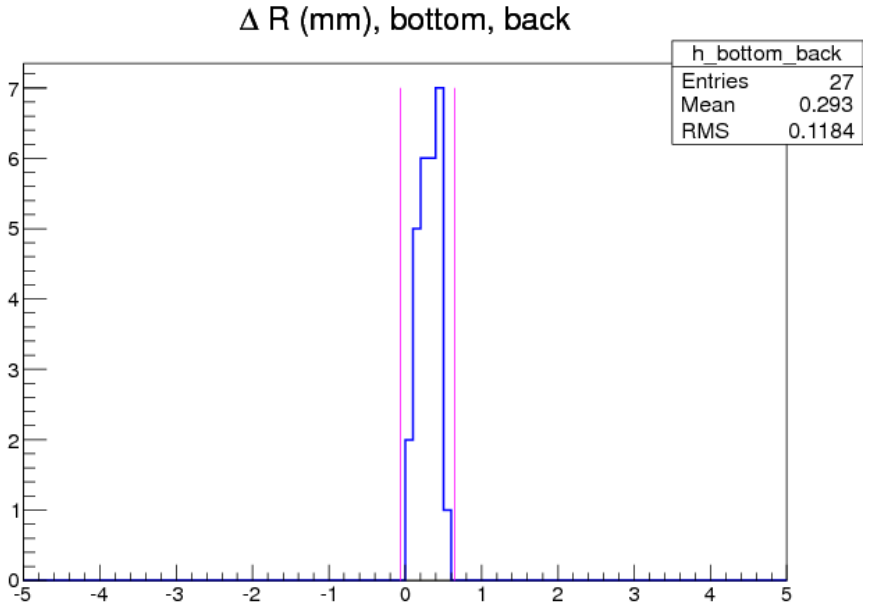
d>0 the measured point is out of the CAD mirror volume
-> the real mirror is bigger than the model

d<0 the measured point is within the CAD mirror volume
-> the real mirror is smaller than the model

Mirror 3 central



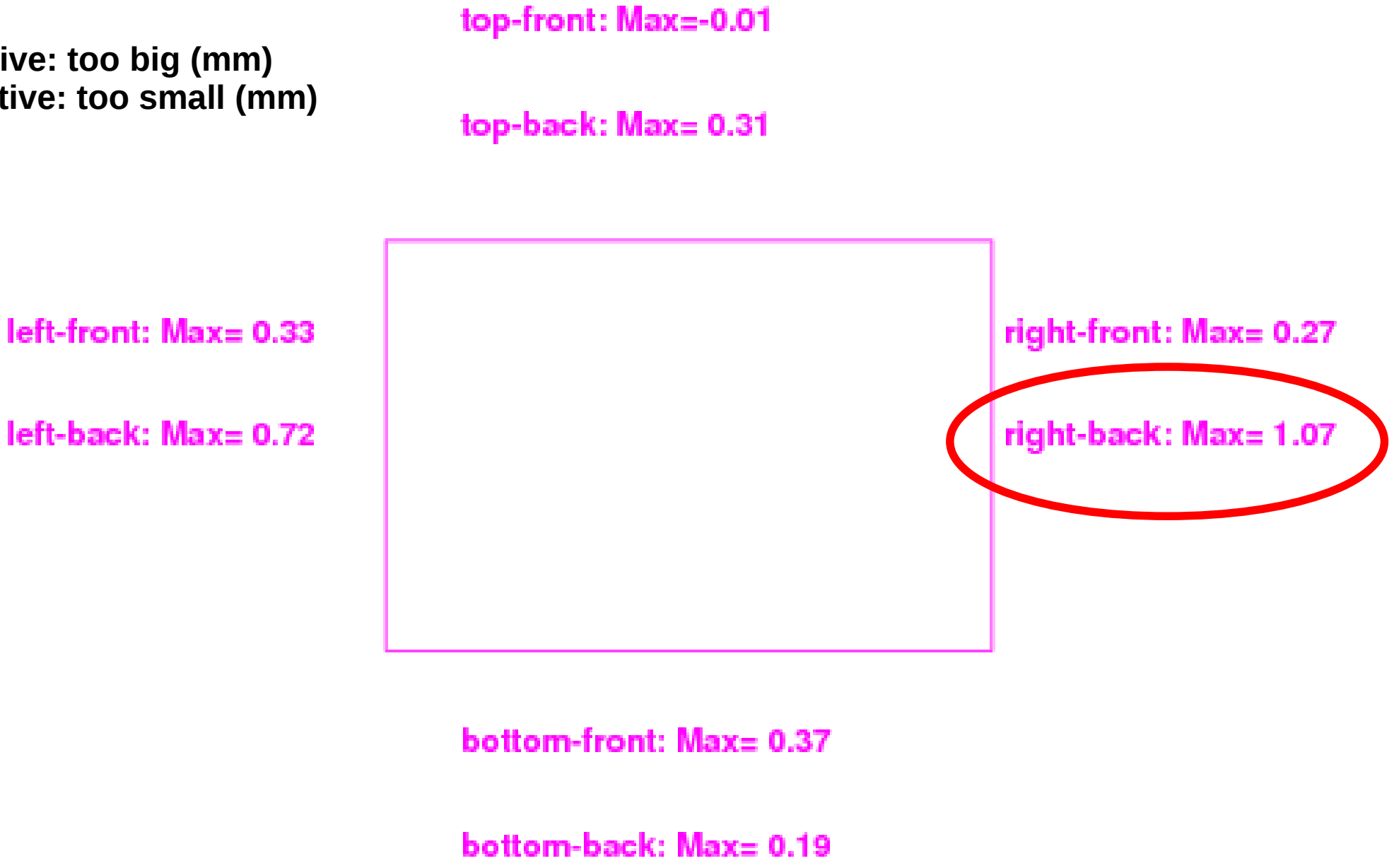




2 central

How much the maximum extension of one edge exceeds the CAD model at 3 RMS level

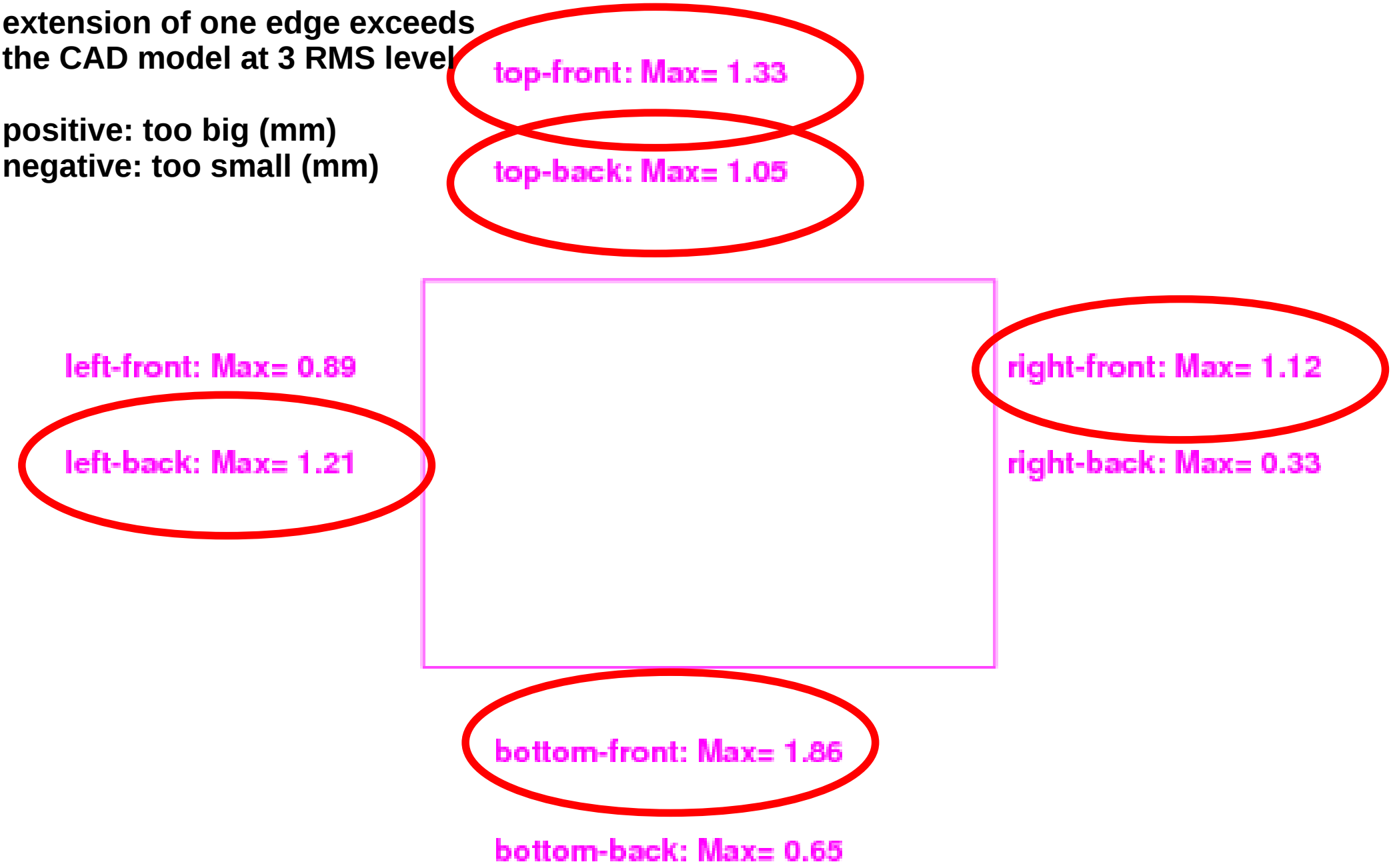
positive: too big (mm)
negative: too small (mm)



3 central

How much the maximum extension of one edge exceeds the CAD model at 3 RMS level

positive: too big (mm)
negative: too small (mm)



4 central

How much the maximum extension of one edge exceeds the CAD model at 3 RMS level

positive: too big (mm)
negative: too small (mm)

5 central

How much the maximum extension of one edge exceeds the CAD model at 3 RMS level

positive: too big (mm)
negative: too small (mm)

top-front: Max= 0.23

top-back: Max= 0.28

left-front: Max= 0.33

left-back: Max= 0.74

right-front: Max= 0.32

right-back: Max= 0.93

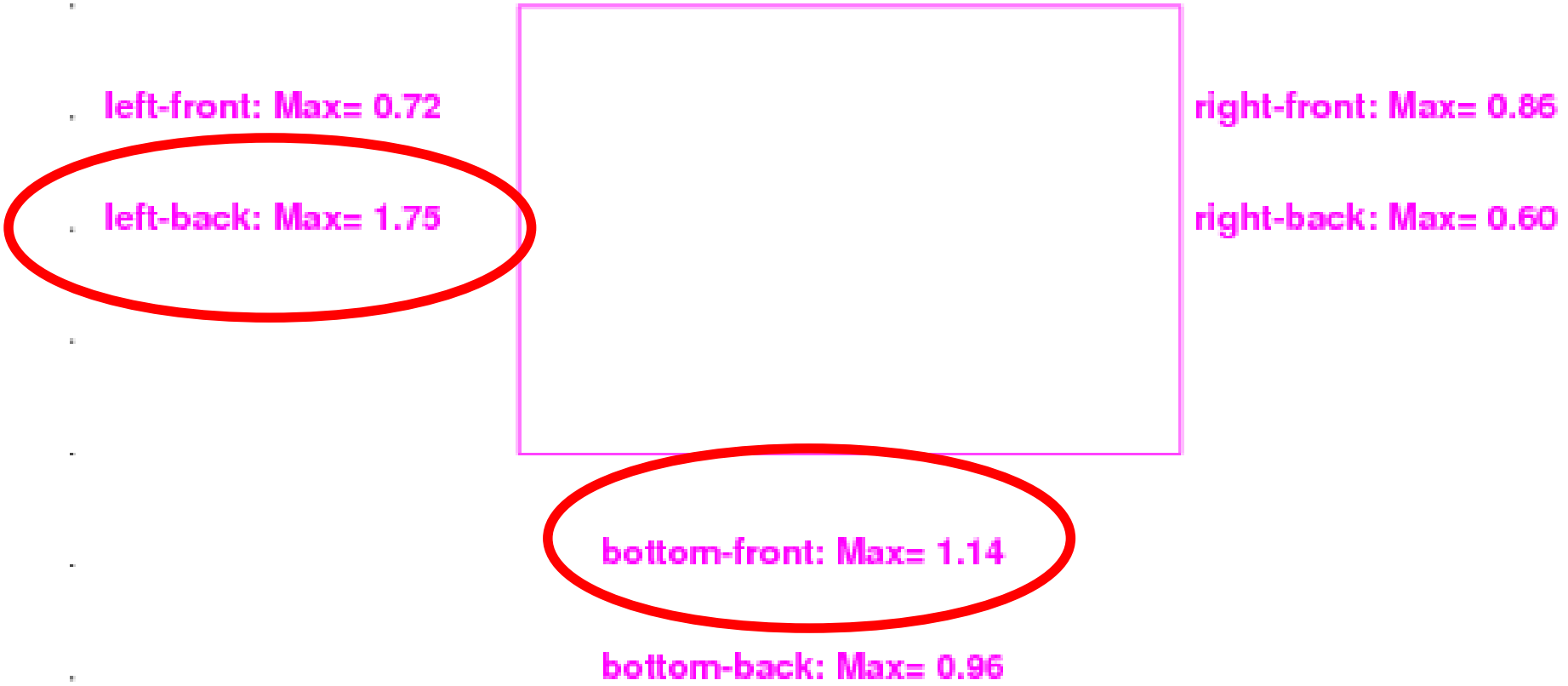
bottom-front: Max=-0.03

bottom-back: Max= 0.39

3

How much the maximum extension of one edge exceeds the CAD model at 3 RMS level

positive: too big (mm)
negative: too small (mm)



4

How much the maximum extension of one edge exceeds the CAD model at 3 RMS level

positive: too big (mm)
negative: too small (mm)