Vacuum chamber window

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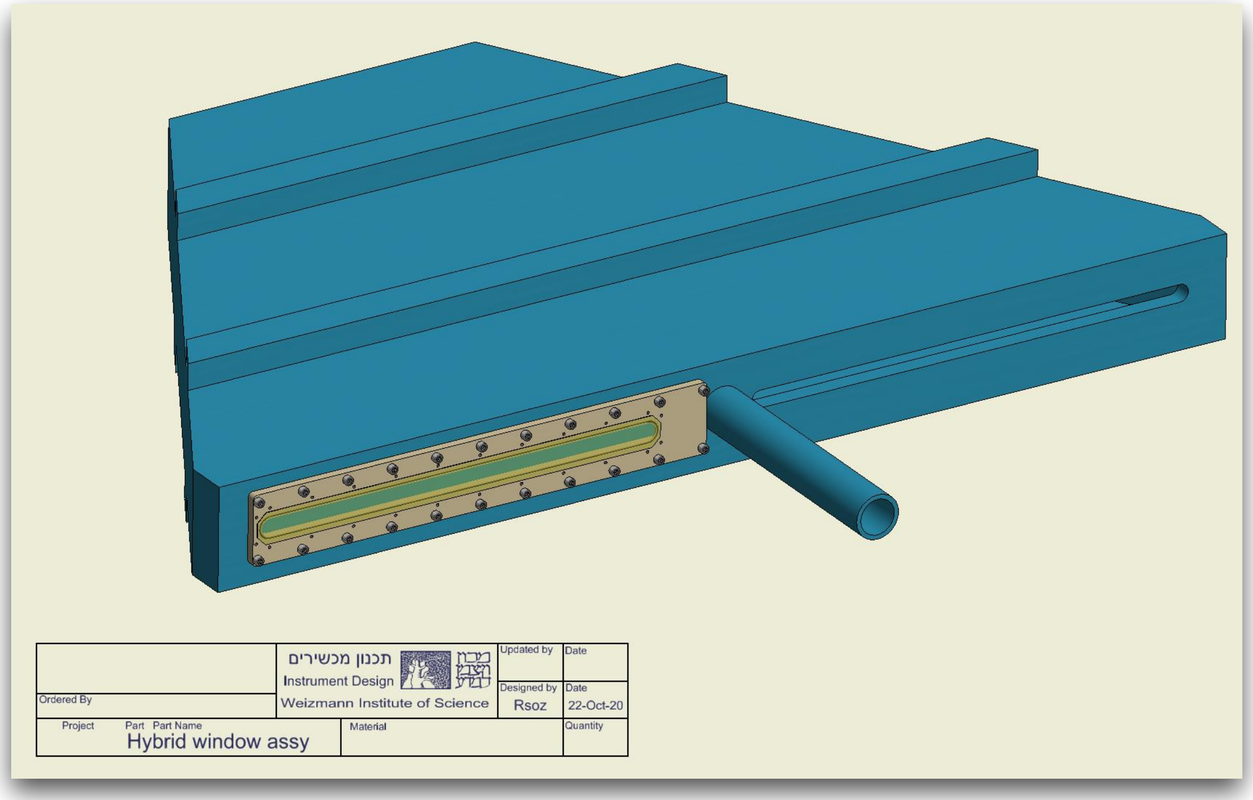
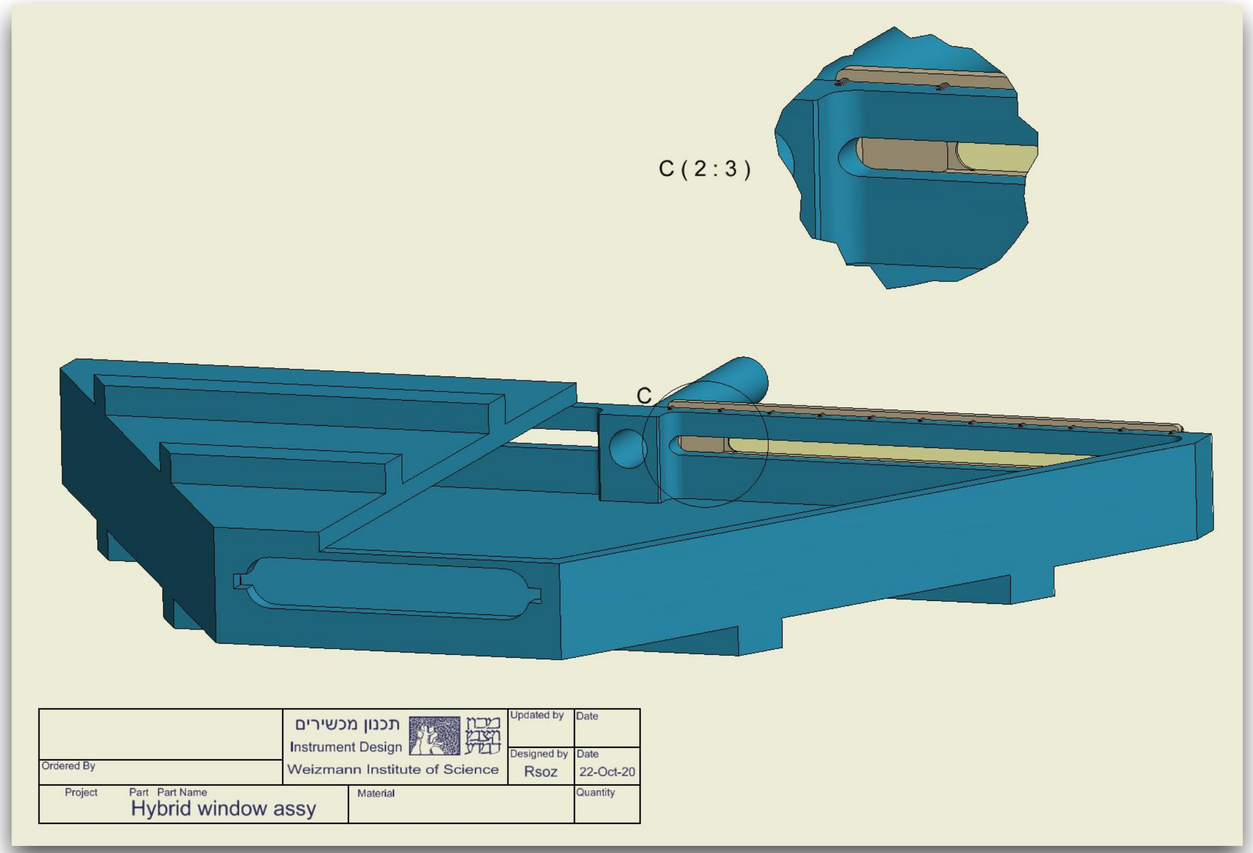
- When designing the vacuum chamber, we were focusing too much on the photon+laser setup where there's no beam exiting it essentially

- As pointed out by Sasha (and Kyle), while the 200um Kapton is good enough to be used as a conversion target and a vacuum seal in the fwd part, it is probably not good enough to hold the electron beam exiting it in the e+laser setup

- Presenting here a hybrid idea to mix 0.5mm Al with 200um of Kapton
- Can also do fully-Al-based milled solution (see next)
- Still need to study the rad-hardness of 0.5mm Al

Vacuum chamber + window

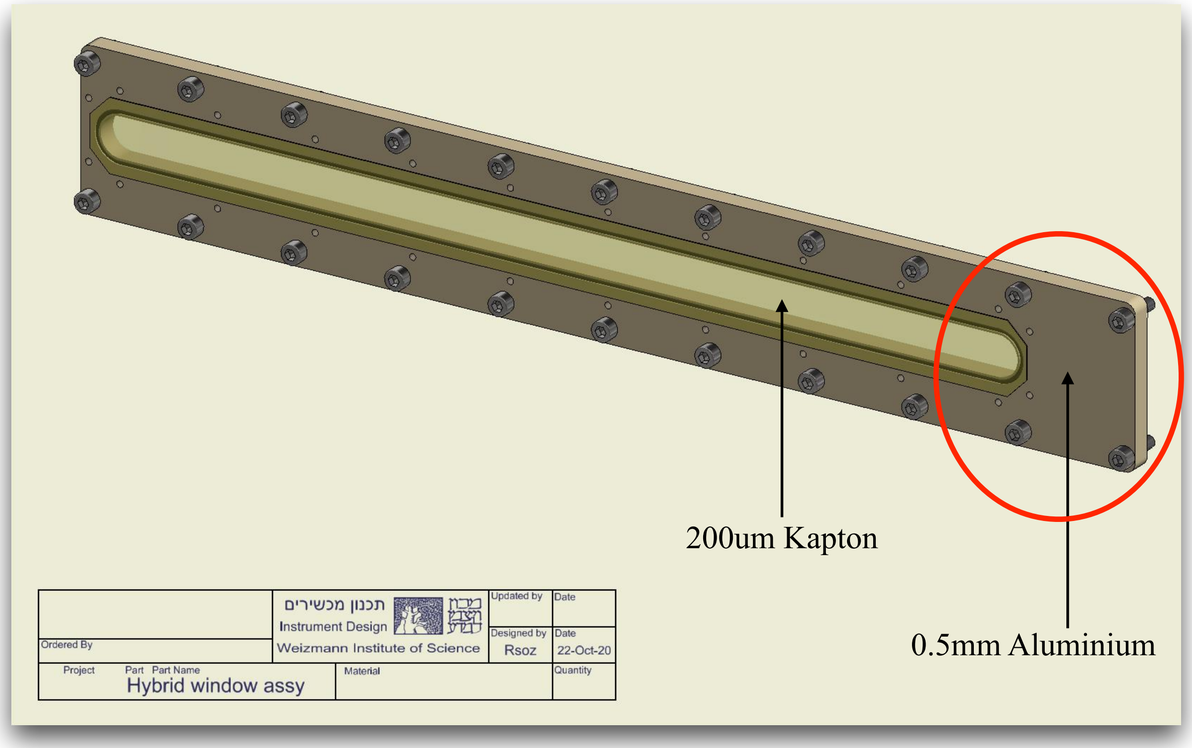




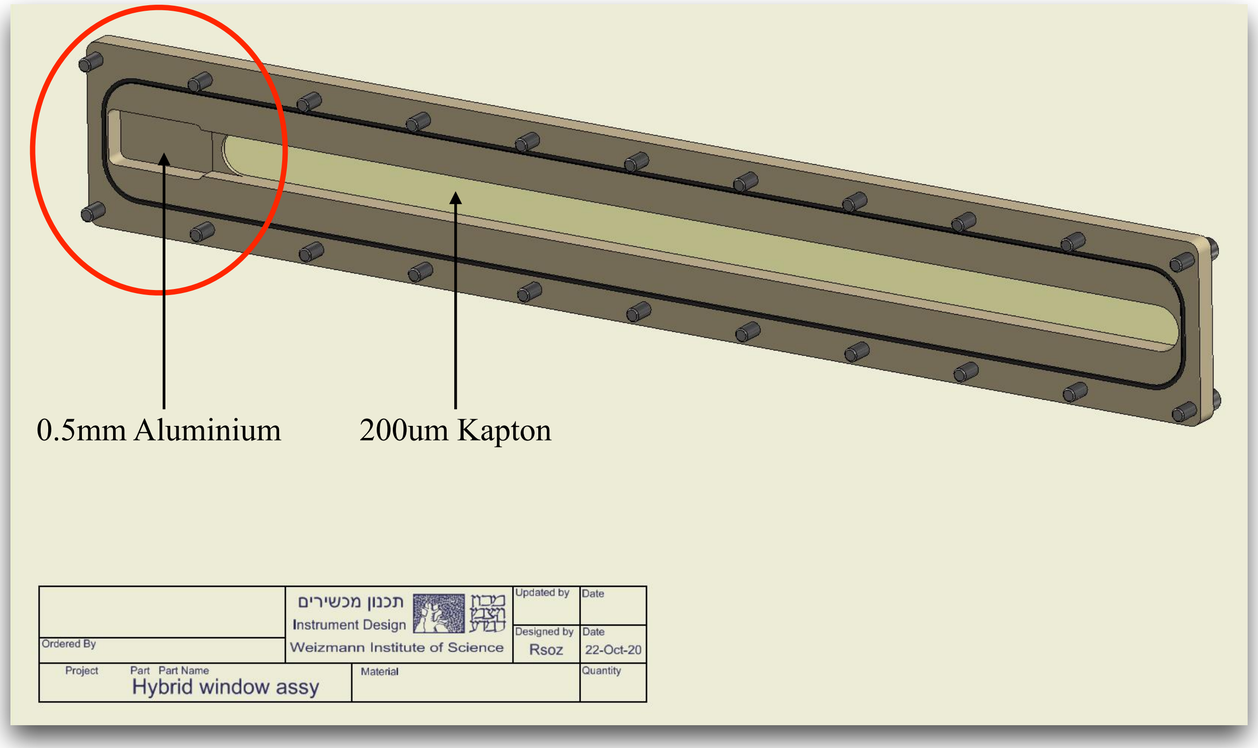
- Aluminium “window bar” attached to the vacuum chamber at its exit
- The window is machined (milled) to 0.5 mm at the part close to the beampipe
- The rest is continued 200um Kapton

Window bar

front view



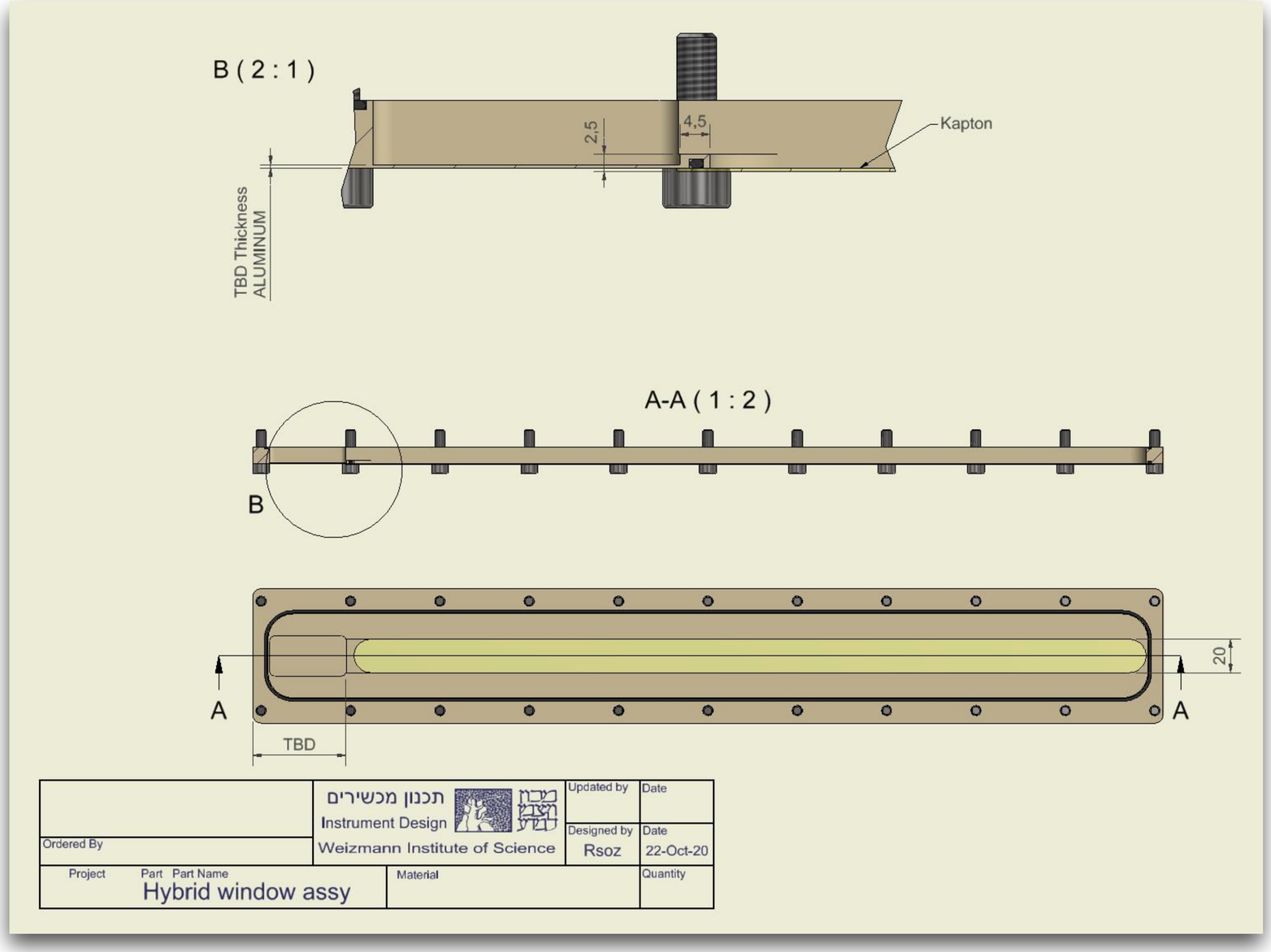
back view



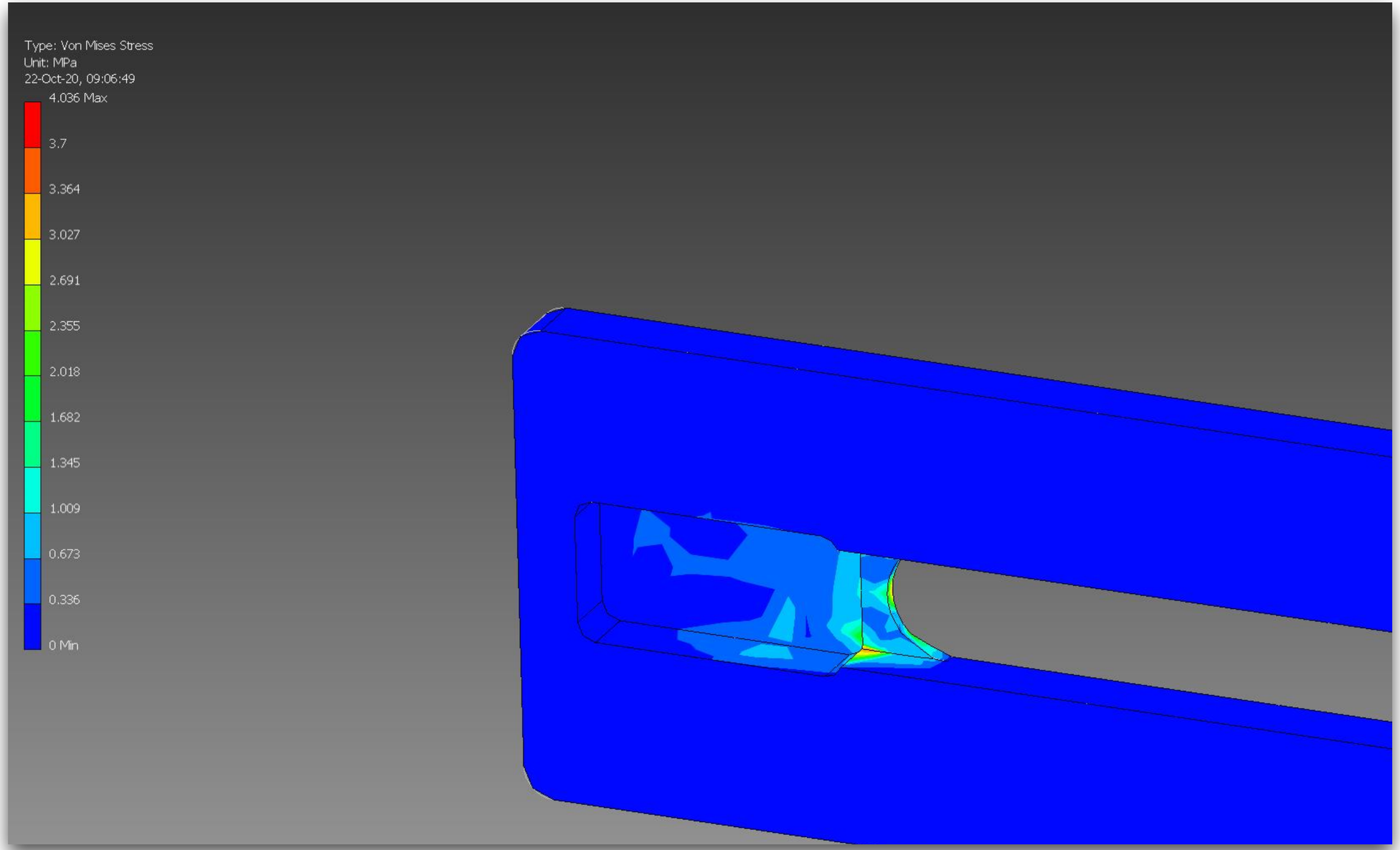
- Not shown here is the part which attaches the Kapton to the Aluminium (but you can see the threads for that)

Window bar

- Aluminium section length is TBD
- Depending on the B-field and beam energy…



Stress at the joint due to vacuum



Deformation at the joint due to vacuum