TITANIUM RING DEVELOPMEMENT

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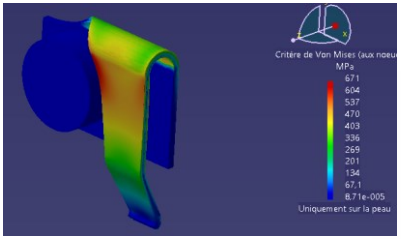
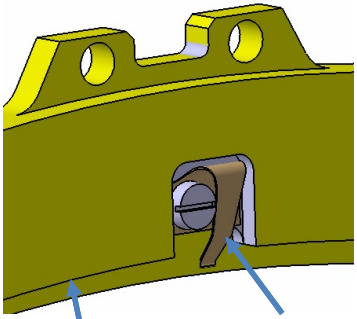
IN 2021: 200MM DISK RING DESIGN



Stress axial fixation

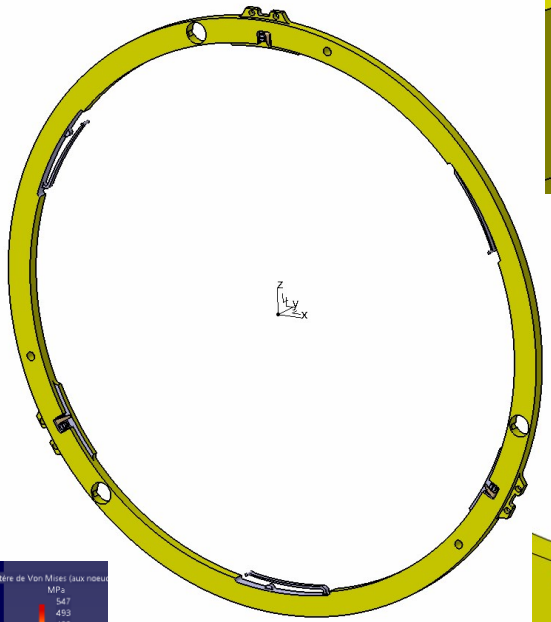
Preload: 0,85N
K= 0,85N/mm

x 3

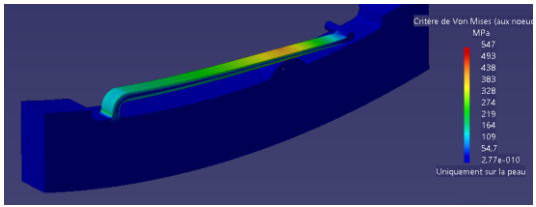


Axial spring

Disk pad

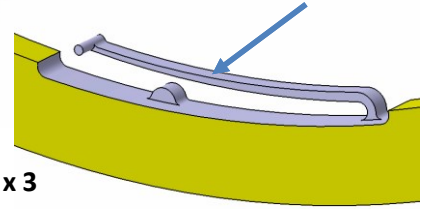


Stress radial fixation



Preload: 2,5N
K= 1N/mm

Radial spring



x 3

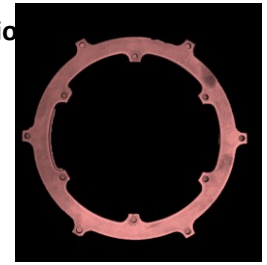
IN 2021: MACHNING PROCESS

! Relaxation of internal stress in order to avoid deformation during machining

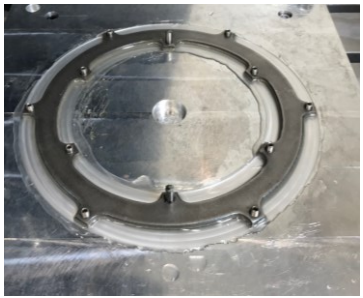
TA6V plate

Rough machining

Thermal relaxation treatment



Grip: Fixing in resin

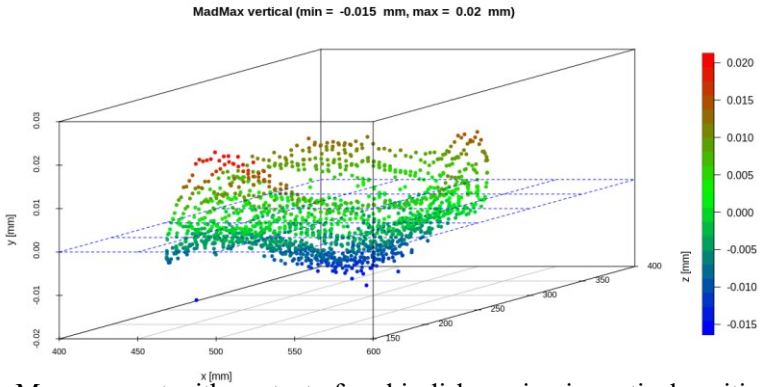


! Fixing that doesn't deform ring during machining

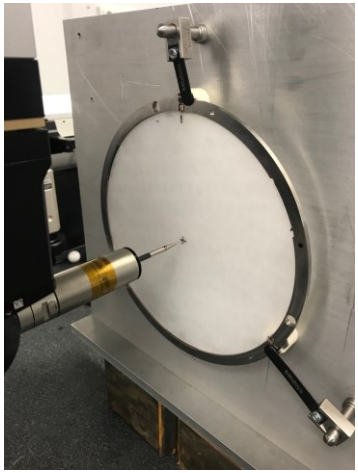
Machining up and down faces

Machining 3 radial springs (EDM)

IN 2021 : MEASUREMENT OF DISC FLATNESS WITH & WITHOUT RING



Measurement with contact of saphir disk on ring in vertical position



Planarity of saphir disc with ring : **$\sigma = 35$ µm**
Planarity of saphir disc without ring : **$\sigma = 36$ µm**

Measument in many configuration (with/without ring, horizontal/vertical): non sensible influence

Planarity is not modified by the ring
Set up has been sent for integration in P200 (Nov. 21)

IN 2021: RETURN OF EXPERIMENT

The machining process seems efficient

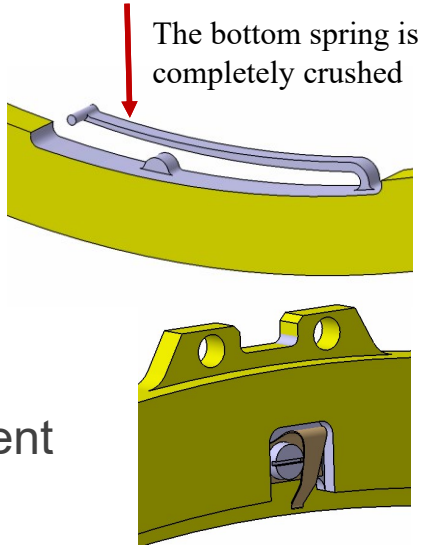
The ring does not constrain or deform the disc

Radial spring are too flexible

- Disc is not centered

Axial spring is small

- Difficult to install
- Risk of spring disengagement



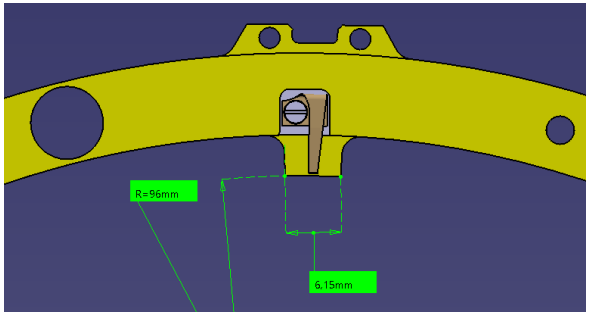
2022 PROGRAM FOR RING

Investigation on radial spring

- Increase stiffness but risk of disc flexion
- Remove radial spring: disc is not centered (Δ=0,5mm)/ Is it a problem for physics?

Investigation on axial spring

- Increase lengh but we also increase signal shadow



Investigation to reduce thinness of the ring :

(4mm→ 3mm?)

Return of experiment on P200

- Modification of interface?
- …

If needed machining of new 200mm ring with improvement (06/22?)

Rings for 300mm disc

- Need feek back on P200 for design
- Disc: Saphir ou tiled?
- 3 rings machining
- Discs mounting, Metrology