

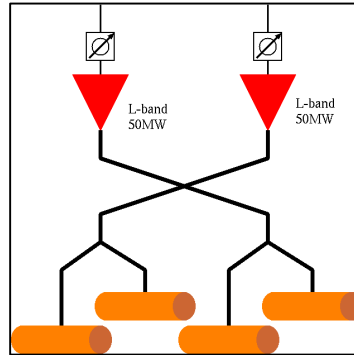
Sources Subgroup Summary

IDT-WG2, Jun.28. 2022, K. Yokoya

- Jun.20 28th Regular meeting
 - ✓ Masao Kuriki, Kaoru Yokoya, Hitoshi Hayano, Peter Sievers, Jenny List, Sabine Riemann, Samanwaya Patra, Manuel Formela
 - ✓ Indico <https://agenda.linearcollider.org/event/9736/>
- 3 talks on the recent positron progress
 - ✓ Status of APS Cavity Study (Masao Kuriki)
 - ✓ Thermal stresses on the rotating target wheel (undulator scheme) (Samanwaya Patra)
 - ✓ Plasma lens (Manuel Formela, Gregor Loisch) (presented at IPAC22, WEPOPT022)

APS Cavity (M.Kuriki)

➤ Calculation of the loading compensation by phase/amplitude modulation



No modulation : $\cos \omega t + \cos \omega t = 2 \cos \omega t$

In phase mod. : Phase modulation

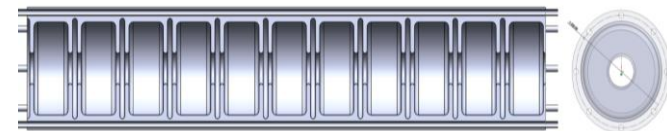
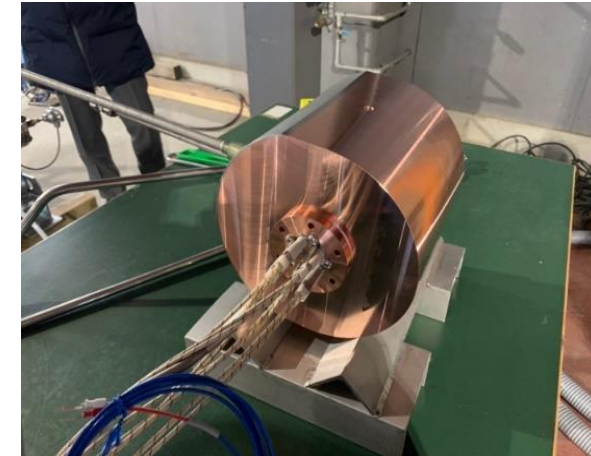
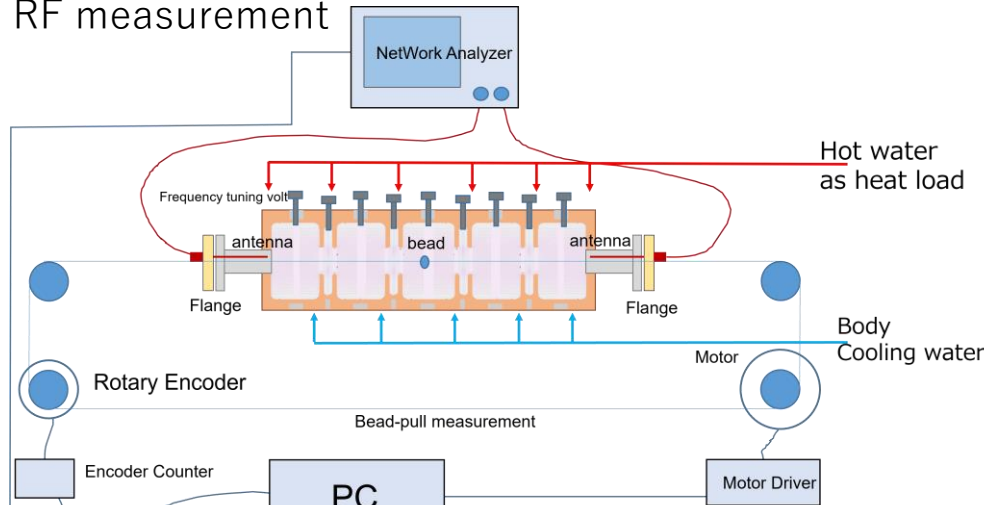
$$\cos(\omega t + \varphi) + \cos(\omega t + \varphi) = 2 \cos(\omega t + \varphi)$$

Anti-phase mod. : Amplitude modulation

$$\cos(\omega t + \varphi) + \cos(\omega t - \varphi) = 2 \cos \varphi \cos(\omega t)$$

➤ Thermal study

- ✓ Frequency change due to the thermal load by the beam
- ✓ Simulation and Model measurement
- ✓ Cooling
 - Two counter-flow cooling water. $\Delta T = 10K$ acceptable
- ✓ RF measurement



Rotating Target (S. Patra)

➤ Heat calculation of the rotating target for the undulator scheme

➤ Heat calculation of the rotating target for the undulator scheme

➤ The first step: steady state

➤ Radiative cooling

➤ 2,07kW deposite

➤ Heat spot size 1.325mm at $r=50\text{cm}$ (wheel rim at 65cm)

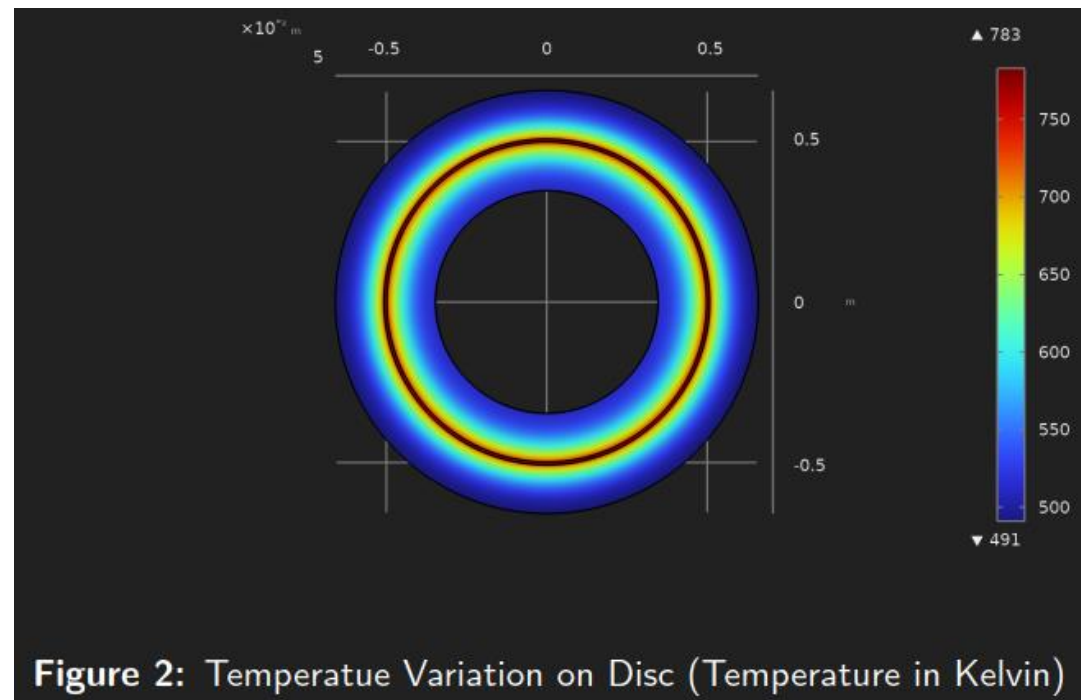
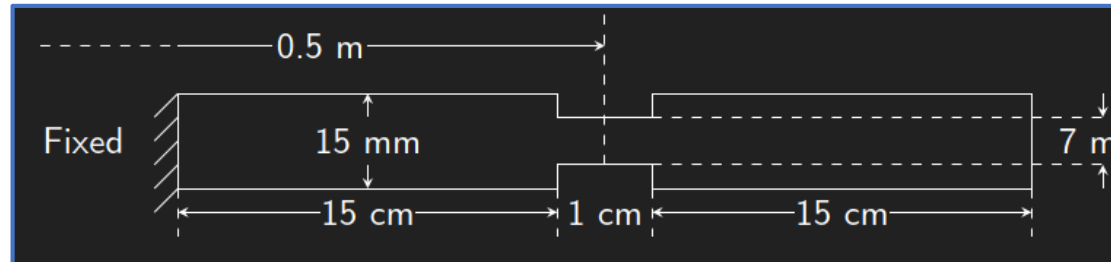
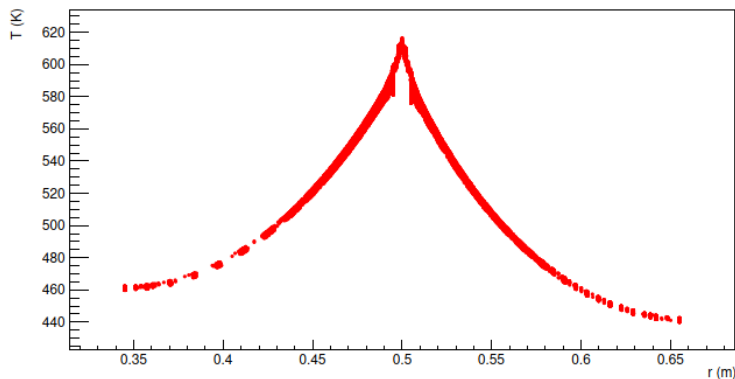


Figure 2: Temperature Variation on Disc (Temperature in Kelvin)