MuCol Meeting Notes – 23/01/2023

Sosoho-Abasi (Uni Rostock):

- Presentation of some preliminary results on the survey of some low-loss cavity geometries from literature in comparison to the TESLA cavity (see uploaded slides)
- Presentation summary:
    - Eigenmode and wakefield analysis was carried out on four low-loss cavity geometries, and the TESLA cavity geometries were analysed, each consisting of nine mid-cells
    - The fundamental mode and higher order modes' quantities of interest were not drastically different for the low-loss cavities
    - Calculated static power loss per cavity for each cavity was 7.44 W
    - Calculated dynamic power loss per cavity was an average of 100 W
    - Calculated HOM power was an average of 4.5 kW for the four low-loss cavities

Several remarks were made during the presentation and in the following discussion.

The prominent remarks are:

- Since the presented cavity geometries have quite similar properties, two with available end-cell geometric parameters should be selected, and a complete time-domain simulation performed on them

- The wake impedance threshold should be checked from https://indico.cern.ch/event/1219418/contributions/5129955/attachments/2551441/4395332/2022-11-21_MuCol_WG10_followup_amorim_v2.pdf

- An ERL cavity geometry profile should also be analysed if the impedance threshold is not much of a problem. The aim is to see how a larger aperture (in comparison to the low-loss cavities) cavity geometry compares to the low-loss cavities

- Other frequencies should be considered but not below 1000 MHz, nor above 1300 MHz

- The HOM power and sigma_z should be cross-checked

To-do – Sosoho/Jiss (Uni Rostock)

- Wakefield simulation for a low-loss and TESLA cavities (+ an ERL cavity)