Goniometer impedance update (AKov and AKol):

New simulations for the Goniometer impedance estimations are presented. The Sacherer formula is used for tune shift estimations. The transverse impedance is estimated through macros in CST referring to C. Zannini past presentations. Most of the resonances are coming from the open space on the movable pipe piece. When using a slit to let the arm go through, only one mode at $f > 2$ GHz is seen.

FC comments that we should be careful with heating from HOM modes. A good approach for complicate devices is to compare numerical wire simulations with wire measurements. The quartz of the crystal should be characterized with resonator cavity methods. Action for the impedance team $\rightarrow$ Characterize the electromagnetic parameters of the crystal on some spare.

FC adds that, to mitigate an HOM, one should insert more lossy materials to de-Q the mode and therefore decreasing the losses induced by the beam (in a kind-of counter intuitive way).

SM informs that the goniometer is 2 mm apart at flat top and 4 mm at injection. FC warns that a crystal is an insulator: the cumulated static charge could break the device as it creates a high local potential. A small coating or doping can be a cure.

FC adds that the crystal, 5 mm long, can host potentially Cherenkov and dielectric resonances. The $\varepsilon_r$ is $\approx 4 - 6$.

FC suggests to test the device in an electron machine (like CALIFES) as it could tell us informations about the crystal at high frequencies (use of very short bunches). FC comments that, as the radius of the beam pipe is 40 mm, the TE11 mode is at 1.8 GHz: sets the upper limit validity of the wire method.

ILG informs that the Goniometer can be measured early next month without crystal to ease comparison with simulations. Action for the impedance team $\rightarrow$ Re-measure the goniometer w/ and w/o crystal and compare with simulations.

FC warns that heat transfer through radiation may be important in the device. ILG comments that we have 2 PT100 to be looked at, not shielded, as temperature probes.

Status and procedures for MKI heating issues

The MKI is segmented to fasten the rise time of the kicker. 24 wires capacitively coupled ensure partial shielding of the beam. From operation observation, it is seen that the ferrite heats up and reaches the Curie temperature, blocking following injections (efficiency
Not uniform losses on the ferrite yokes are studied with CST. LVC calculated the temperature increase and looks in good agreement with observation.

For HL-LHC, a factor 4 more heating is expected. All yokes would be above Curie temperature and new solutions are under study.

FC suggests to improve the resonant wire measurement resolution using a varying capacitor at one end to tune the self-resonance of the wire.

BS reminds that Hugo used a pessimistic approach to estimate the power loss (put $R_s$ on the peak of beam lines), which can explain some discrepancy seen by VV in his simulations.

Ideas to clear out the heating:

1. Decrease the capacitive coupling: shifts up all the resonances.
2. Put a ferrite collar to absorb the heatload.
3. Open holes in the metallic cylinder to absorb energy.

FC suggests also to smear out the resonances with different capacitors to kind-of Landau damp their effect.

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