WP14 Meeting: TCDQ/TCDS material characterization 03/03/2020

Participants: Anton, Miro, Wim, Valeria, Francois-Xavier, Chiara

Main outcomes and Actions:

- Characterisation measurements of 1.4g/cm^3 and 1.75g/cm^3 C-C blocks used in TCDQ and TCDS needed
- **9 TCDQ spare C-C blocks** 250 x 72 x 40 mm (5 with density 1.4g/cm^3 and 4 with density 1.75 g/cm^3) **available** for characterisation tests
- **Need to clarify if exactly same materials are used for TCDS (Miro)**
- Important parameters: CTE (coefficient of thermal expansion) and thermal strengths up to 2000 °C
- Need to analyse several samples in different orientations, typical required sample size: 6 x 6 x 6 mm.
- **Need table with (Francois-Xavier):**
    - **List of materials**
    - **Number and size of samples to test**
    - **Tests to perform (and up to which temperature, 2000 °C)**
    - **Where tests could/should be performed**
    - **Cost**
    - **Time (including machining of samples)**
- **Contact CVT** and **check if more information available** about the materials presently installed in TCDQ/TCDS. If useful, organise a **meeting or a visit (Francois-Xavier)**
- Complete **FLUKA studies** to insure that **just replacing "weak" blocks in TCDS (no additional module) ensures the required protection to the downstream elements (Valeria)**
- **FLUKA studies (or extrapolation from HiRadMat tests)** to evaluate **effect on TCDQ Cu coating in case asynchronous beam dump ➔ impact on impedance (beam induced heating and transverse instability) (Valeria/Anton + impedance team)**
- **Recheck if cooling power for TCDQ (or partial coating) sufficient when operating with HL-LHC beams (2.3e11 ppb). Check achieved temperature during Run 2 and scale to HL-LHC (Chiara/Miro)**
- **Organise meeting with impedance team to evaluate needed studies, time and possibility of performing measurements on existing TCDQ spare tank (to be completed within 2020, including bake-out and vacuum acceptance tests) (Chiara)**

Next meeting with updates Mid/end April 2020.