* + **ACCELERATION WITHOUT ENERGY RECOVERY – RLA mode**

***Injector setup, Phase MLC***

* + - **Recommissioning the gun and the injector up to the diagnostic line**
      * **October 9 – Wednesday: bring up the gun with the old cathode**
      * **Measure the cathode QE – make sure that it survived the power outage (in the case that the cathode is gone replace the cathode from the existing storage if they are gone as well see what Luca will say.)**
      * **Get BPM’s online**
      * **With BPS online, get the BPM reliably to 6 MeV in the ICM.**
      * **October 10 - Thursday: get the 6 MeV beam to the diagnostic line.** **Diagnostic line measurements. BPM charge calibration with faraday cup, emittance/phase measurements to make sure we are close to where we need to be.**
      * **October 11 – Friday: measure the beam properties**
    - **Recommissioning the MLC and the dump beam line**
      * **October 14 – Monday: 6 MeV beam to the beam dump**

**Necessary initial condition: All magnets in the Splitter SX beam line with septum 1 included are powered to their operating values!**

* + - * **October 15, 16 – Tuesday-Wednesday: 42 MeV beam to the S1 beam line**
        + **MLC phase and voltage tuning to the first viewer**
        + **Orbit through the S1 (sliding joints in R1 set at the center while S1 joint is covering the difference)**
        + **The beam is tuned up to the FFA (the last magnet scrapes it into the beam pipe before the FFA)**
        + **Corrections of the orbit up to the FFA**
        + **Measurements of the dispersion up to FFA**
        + **Matching to the FFA**
      * **October 17 – Thursday: 42 MeV beam through the S1 and FFA**
        + **Orbit corrections of the S1 and FFA. The 42 MeV beam is scraped at the end of the FFA at the beginning of S1 into the beam pipe.**
        + **Measurements and corrections of the dispersion function through S1 and FFA.**
        + **Correct the M56 in S1 beam line.**
        + **Measurements of the beam profiles at the end of the FFA transition – beginning of the R1 beam line.**
      * **October 18 – Friday: 42 MeV beam through the R1 beam line but scraped before the MLC into the beam pipe**
        + **Orbit corrections of the R1 beam line up to the last common magnet**
        + **Measurements and corrections of the dispersion**
        + **Measurements of the time of flight and M56**
        + **Measurements of the orbit response and corrections.**
        + **Scanning of the R1 sliding joins for the RF crest, correcting the orbits continuously (based on the MLC BPMs)**
      * **October 19 – Saturday? 42 MeV beam up to the MLC**
      * **October 21 –23 Monday, Tuesday, Wednesday continue the recommissioning the first turn**
      * **Beam through the MLC**
  + **Second turn – 78 MeV beam comes out of the MLC into the S2 beam line From October 24 - 31st 2019:**
    - **S2 beam line commissioning – beam scraped into the beam pipe before FFA**
      * **October 24, 25 Thursday and Friday: commissioning of the S2 beam line**
      * **Orbit corrections of the S2 beam line and beam profiles tuning**
      * **S2 dispersion measurements and corrections**
      * **S2 matching to the FFA**
      * **S2 Orbit response measurements**
    - **October 28 Monday: Two beams going through the FFA beam line, but the beam is scraped at the beginning of R2.**
      * **Orbit corrections of both 42 and 78 MeV beams in FFA’s (using least square adjustments and orbit response matrix**
    - **October 29, October 30, October 31: Tuesday, Wednesday, and Thursday: The S2, FFA, and R2 beam line commissioning with two beams in the FFA two beam passes through the MLC the 42 MeV and the 78 MeV beams.**
      * **Orbit corrections in the R2 beam line of the 78 MeV beam and beam profiles tuning**
      * **The 78 MeV beam dispersion measurements in the R2 beam line**
      * **The R2 78 MeV matching up to the MLC**
      * **S2, FFA, R2 Orbit response measurements**
      * **Beam stops at the end of the R2 line before the MLC**
      * **Scan the R2 sliding joints for the RF crest**
  + **Third turn through MLC beam comes out with energy 114 MeV into the S3 beam line: From November 1 – November 8**
    - **November 1st, Friday: S3 beam line commissioning – 114 MeV beam scraped before FFA**
      * **Orbit corrections in the S3 beam line and beam profiles tuning**
      * **The 114 MeV S3 dispersion measurements (beam is scraped at the end of the S3 beam line into the beam pipe)**
      * **S3 matching to the FFA**
      * **S3 Orbit response measurements**
    - **November 4th, 5th, and 6th Monday, Tuesday, Wednesday: three beams through the FFA 42 MeV, 78 MeV, and 114 MeV. The 114 MeV beam is scraped at the beginning of the S3 beam line.**
      * **Orbit corrections in the FFA of three 42, 78, and 114 MeV beams (using least square adjustments)**
      * **Orbit corrections and time of flight measurements of the three beams.**
    - **November 7th and 8th: Thursday and Friday: R3 114 MeV beam line commissioning (beam is scraped into the beam pipe at the end of the R3 beam line).**
      * **Orbit corrections of the R3 114 MeV beam line and beam profiles tuning**
      * **R3 114 MeV beam dispersion measurements**
      * **R3 114 MeV beam matching to the MLC**
      * **R3 114 MeV Orbit response measurements**
    - **Time of flight adjustment with S3 and R3 sliders**
    - **M56 measurements and adjustments (one shift)**
      * **Scan the R3 sliding joints for the RF crest**
  + **Fourth turn through MLC the beam comes out with energy 150 MeV into the S4 beam line: Period between November 11th- 15th Monday-Friday**
    - **November 11th and 12th Monday and Tuesday: S4 150 MeV beam line commissioning – the beam is scraped before FFA**
      * **The 150 MeV beam orbit corrections of the S4 beam line and beam profiles tuning (quad corrections)**
      * **S4 150 MeV dispersion measurements**
      * **S4 150 MeV beam matching to the FFA**
      * **S4 150 MeV Orbit response measurements**
    - **November 13th Wednesday: four beams going through the FFA beam line, but the beam is scraped at the beginning of R4 beam line.**
      * **FFA Orbit corrections of four 42, 78, 114, and 150 MeV beams (using least square adjustments)**
      * **November 14th Thursday: Time of flight measurements and adjustments**
    - **Friday November 15th: R4 beam line commissioning – beam is scraped at the end of the R4 beam line before the MLC**
      * **The 150 MeV beam orbit corrections in the R4 beam line with beam profiles measurements and quadrupole adjustments**
      * **R4 150 MeV Orbit response measurements**
      * **R4 150 MeV beam dispersion measurements**
      * **R4 150 MeV beam matching to the MLC**
    - **Time of flight adjustment with S4 and R4 sliders**
    - **M56 measurements and adjustments (one shift)**
    - **Scan the R4 sliding joints for the RF crest**