MI studies for NuMI

1) **Commission multi-batch operation in MI**
   a. Finalize magnetic ramp characteristics (cycle $23) and LLRF batch positioning
   b. Test effect of fall time of MI52 kicker on the first NuMI batch.
   c. Tune MI for multi-batch operation (determine tune and chromaticity along $23 ramp)
   d. Commission MI dampers for multi-batch operation
   e. Study effect of bunch rotation in multi-batch mode
   f. Measure beam losses in MI when in multi-batch mode
   g. Commission "new" MI BPM system for multi-batch operation
2) **Stacking schemes in MI**
   a. Implement slip-stacking gymnastic for the batch delivered to pbar target in cycle $23 (or implement a different cycle ?) and understand consequences for the NuMI batches
   b. Study fast stacking options for NuMI
3) **Measurements of beam quality**
   a. Measure beam characteristics in multi-batch mode: transverse and longitudinal emittance
   b. Measure beam halo in P1 line ? Decide if (and where) we want to install crawling wire devices in the NuMI beamline
4) **Commission MI with NuMI extraction elements**
   a. Study MI orbit with NuMI Lambertson bumps
   b. What's the effect of going off-axis in MI60 RF cavities ?
5) **NuMI Beam Permit System**
   a. Define and implement signals that define the "MI beam quality" input to the Beam Permit system