Beta*-reach: IR aperture measurement at smaller beta

The goal of the MD is to check the available triplet aperture at a small beta*, tentatively beta*=40cm (reference : talk by R. Bruce at https://indico.cern.ch/event/365220/). Another value of beta* could possibly be established if the long-range beam-beam MD has been carried
out and analyzed beforehand.

The beta*-reach is limited by the available triplet aperture. This MD therefore aims at verifying the triplet aperture at a realistic low-beta* configuration, in order to minimize uncertainties in the scaling of measured apertures at higher beta*.

It is assumed that the optics has been corrected down to the chosen beta* before the MD.

The procedure would be (under the assumption of 40cm and 11 sigma BB separation):

-- Inject 1 nominal bunch (for having the correct orbit) and max allowed number of pilots per ring, while staying below the setup beam flag limit. The MD could possibly be carried out using only pilots but the accuracy of the results might be worse (potentially worse hierarchy in IR7 due to orbit)

-- Ramp, squeeze to 40cm. Stay separated. (if necessary for MP, consider collapsing crossing at 80cm)

-- Change half crossing angle to 205 urad

-- Align in IR1/5 TCTs around new orbit and retract to 8.8 sigma

-- Move out all collimators except TCTs (possibly leave IR6 TCSG 1 sigma outside TCTs for MP)

-- Carry out global aperture measurements with ADT method and TCTs retracted in steps. Study B1 and B2, H and V. Possibly follow with TCSG in IR6 (needs ~15 pilots per ring)

-- Finish fill with asynchronous dump test: Move in collimators to standard physics settings, then move in secondary collimators in IR7, as well as the dump protection, by 0.5 sigma. Move out TCTs in IR1/5 to 0.1 sigma inside the level of the measured aperture before the test