

Starting from Elias's extended studies and models, I investigated the effect of a copper layer with thickness varying from 50 to 550 μm . The convolution between the resulting transverse impedance and the beam spectrum provides the coherent tune shift that we can plot on a stability diagram on the complex tune plane.

As you can see, for all the considered thicknesses, the results are well within the stability region.

This means that, with the present design, the FP420 detector should not induce critical coupled-bunch instabilities.

Even though such an effect should be added to the one of other elements contributing to the total LHC impedance, at this stage we can conclude that the FP420 contribution is negligible with respect to the one of the LHC collimators.

Another problem to be considered is the electromagnetic coupling with the detectors.

In the past, RF experts (F.Caspers and M.Deile) carried out detailed studies for the Roman Pots and one should also discuss with them.