Review of the situation without MS10 at the end of leveling with flat optics

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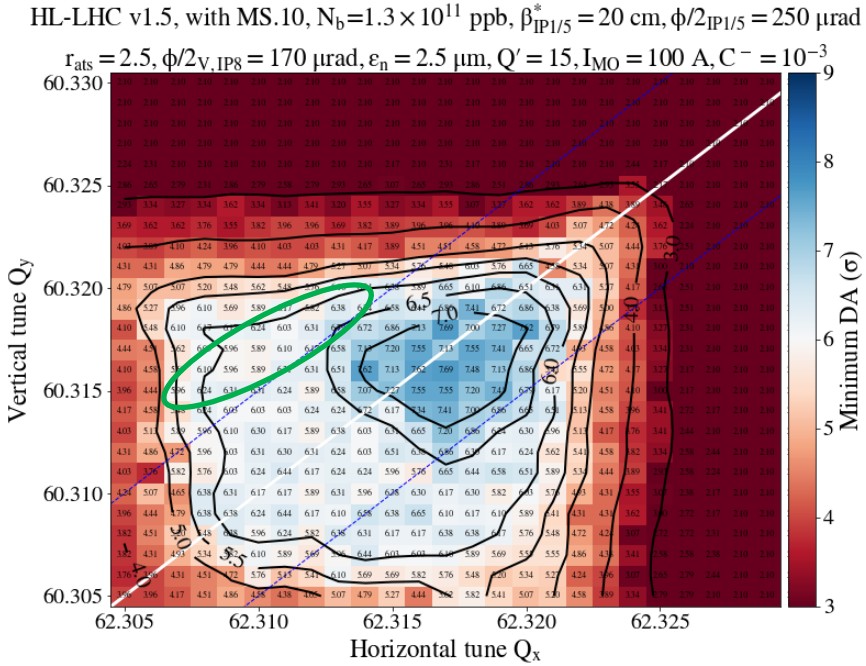
Previous studies with round optics:

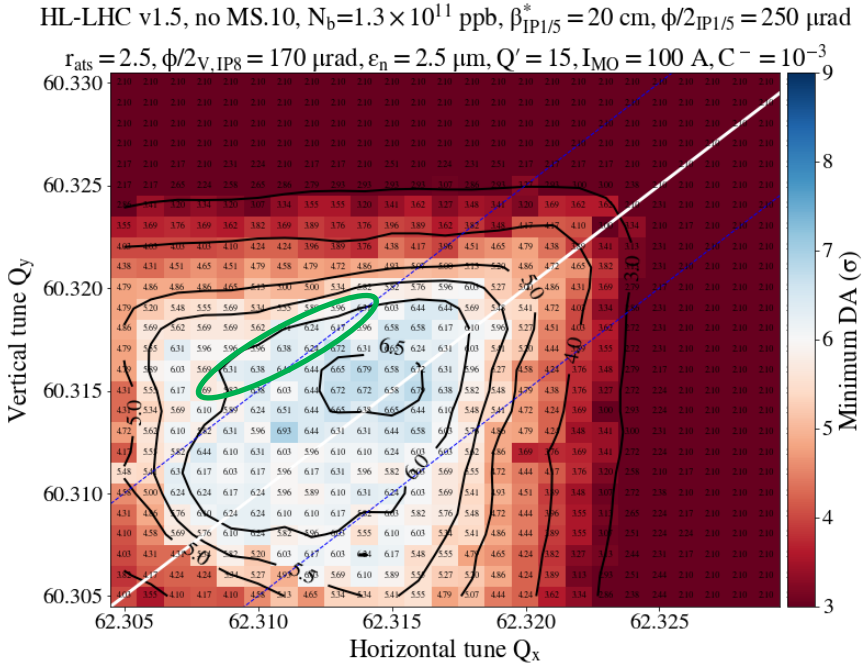
r=2.5, β^*=20 cm, I_{oct}=100 A

C^-=1e-3
on_disp=1

With MS10



No MS10



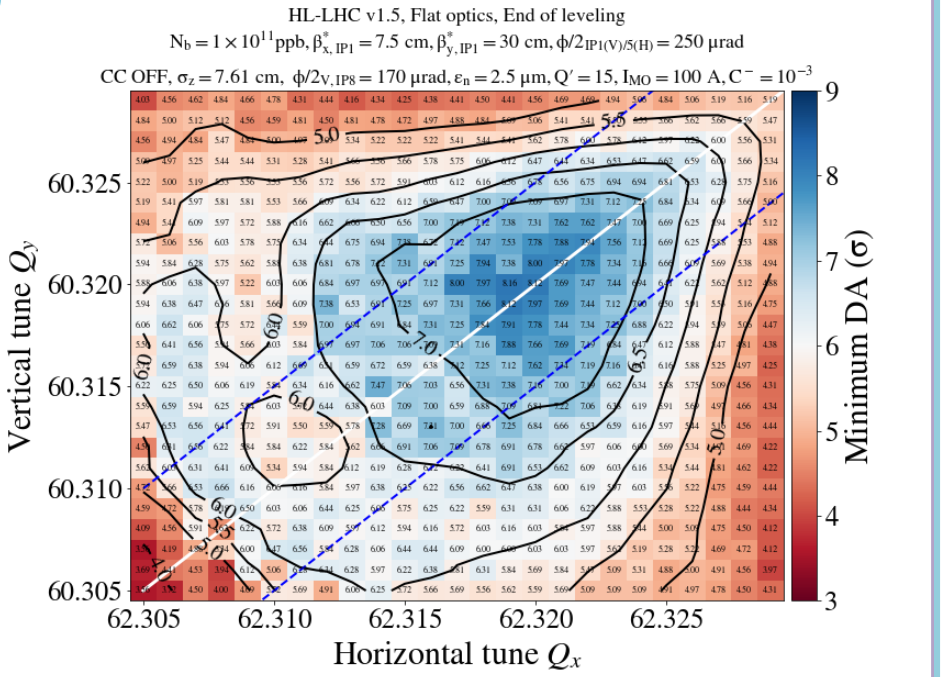
Summary of findings with round optics:

- DA reduction in “No MS10” for EOL but DA target reached.
- Important to operate with on_disp=1 in noMS10 scenario at EOL otherwise visible impact from chromatic coupling.

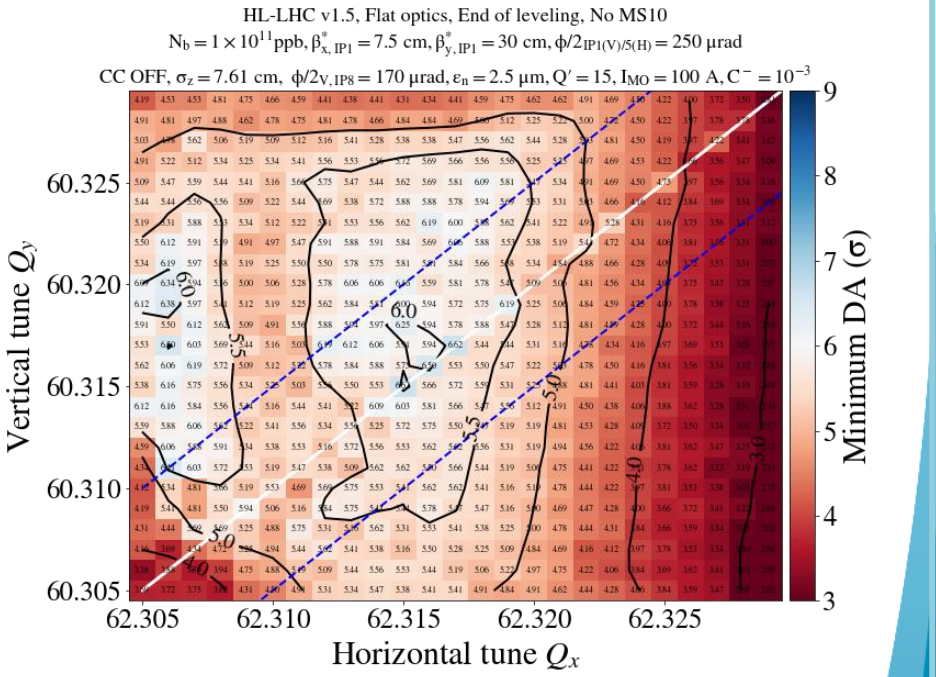
β^*=7.5/30 cm, no CC

C⁻=1e-3
on_disp=1

With MS10



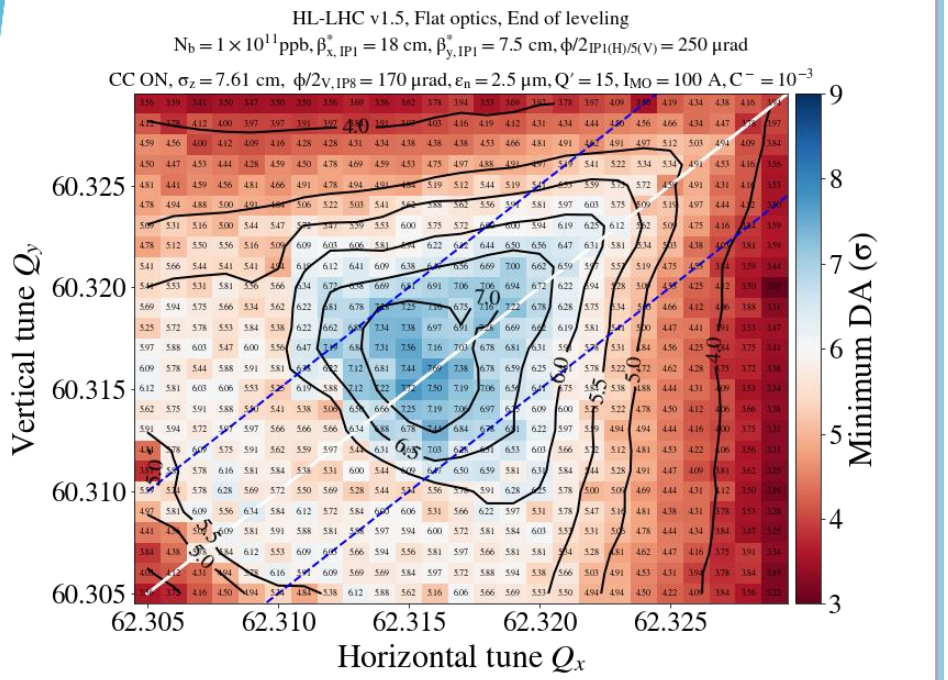
No MS10



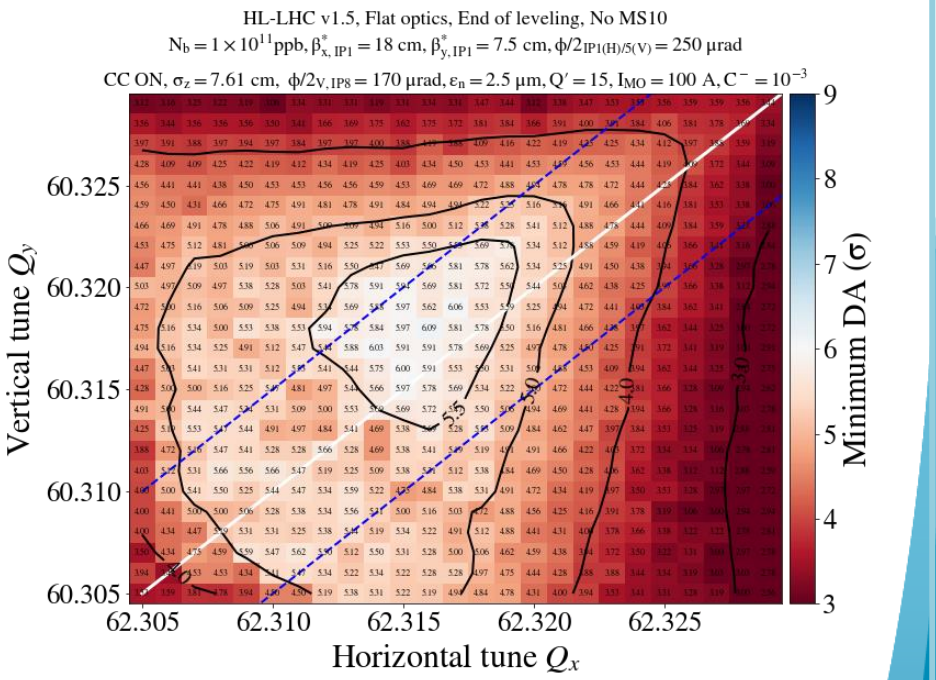
β^*=7.5/18 cm, with CC, H/V

C⁻=1e-3
on_disp=1

With MS10



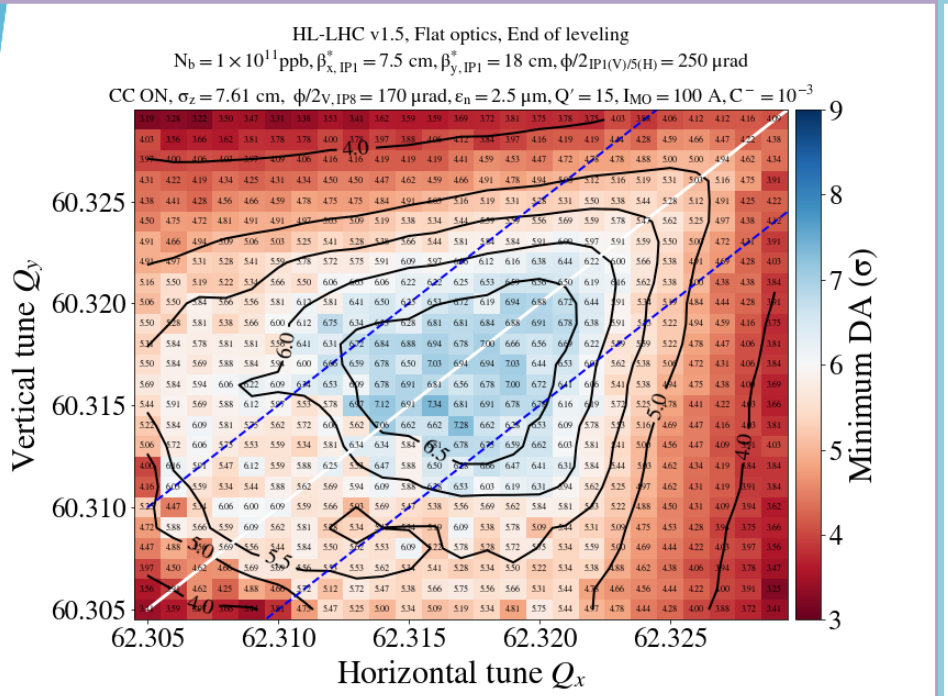
No MS10



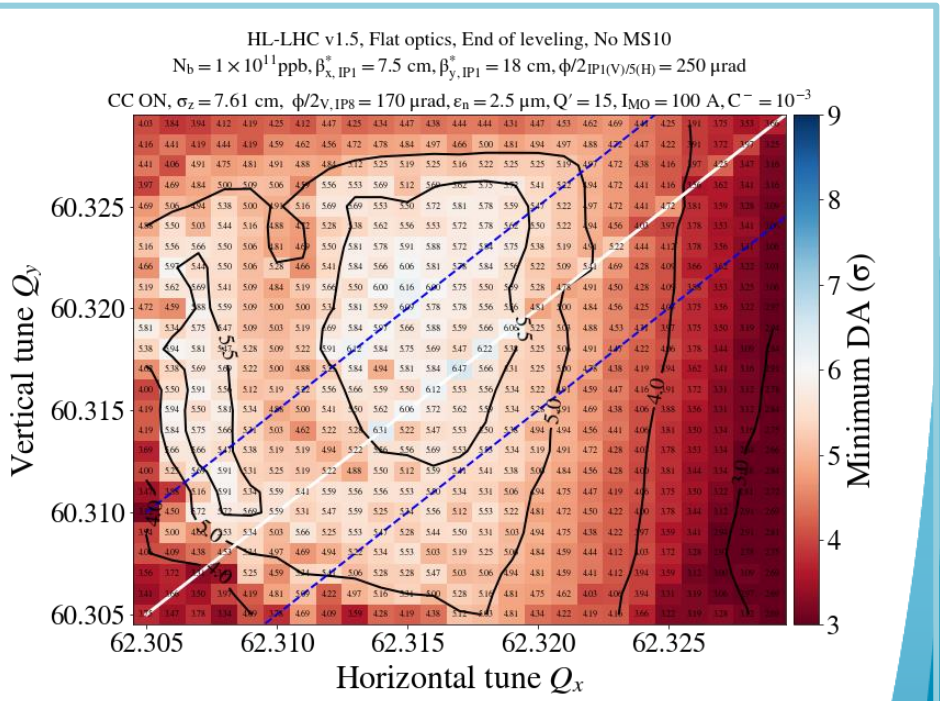
β^*=7.5/18 cm, with CC, V/H

C⁻=1e-3
on_disp=1

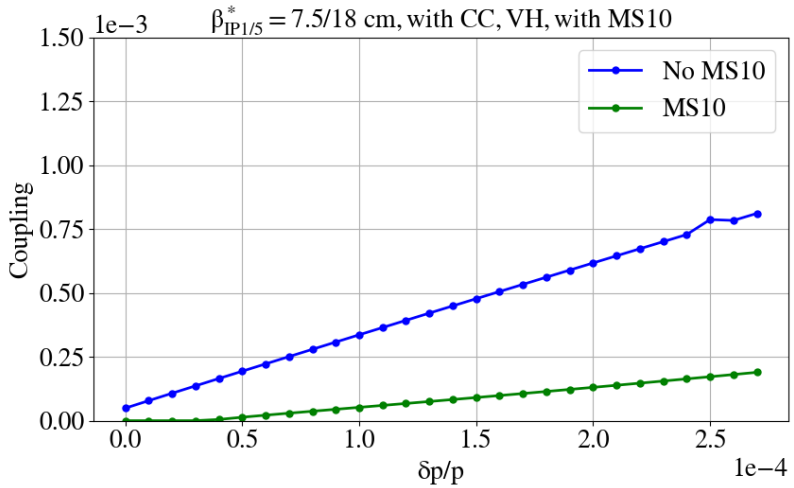
With MS10

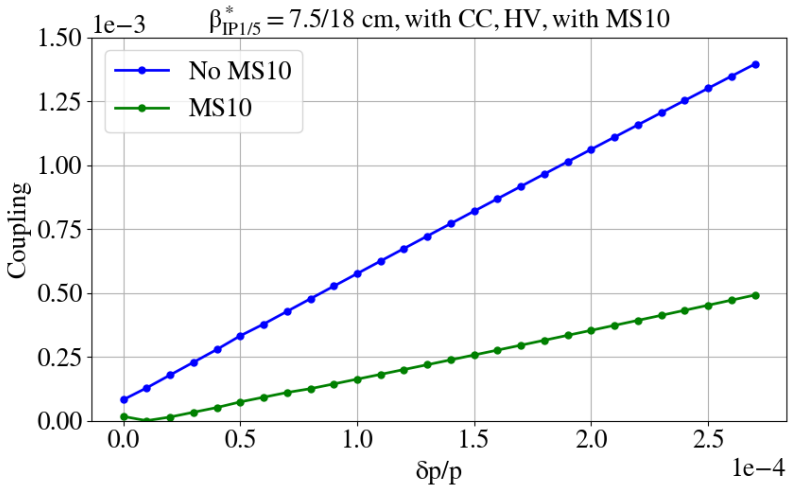


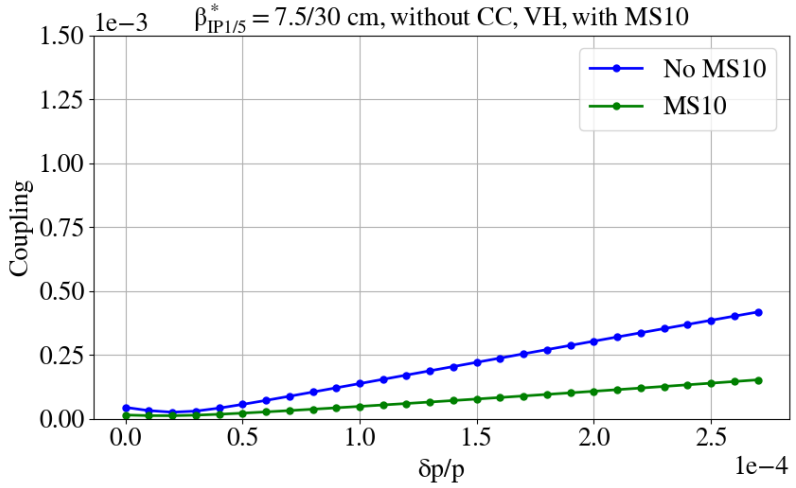
No MS10



Chromatic coupling, w/o BB







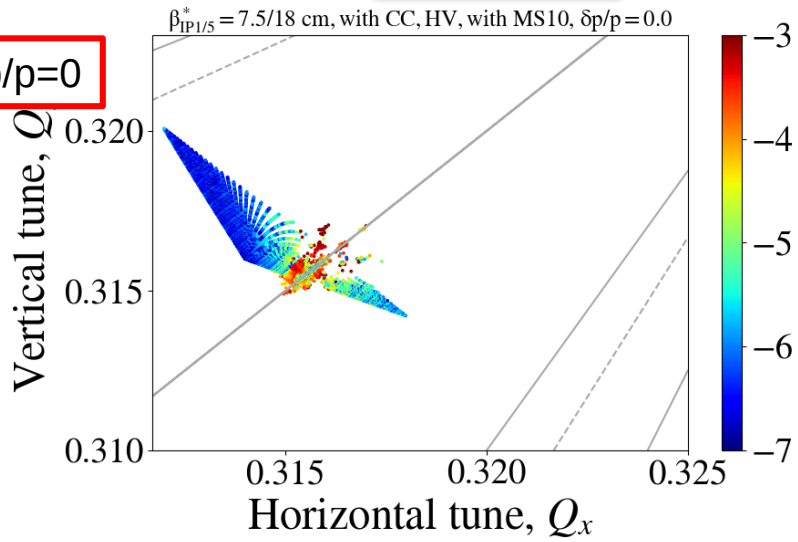
β^*=7.5/18 cm, HV, with CC

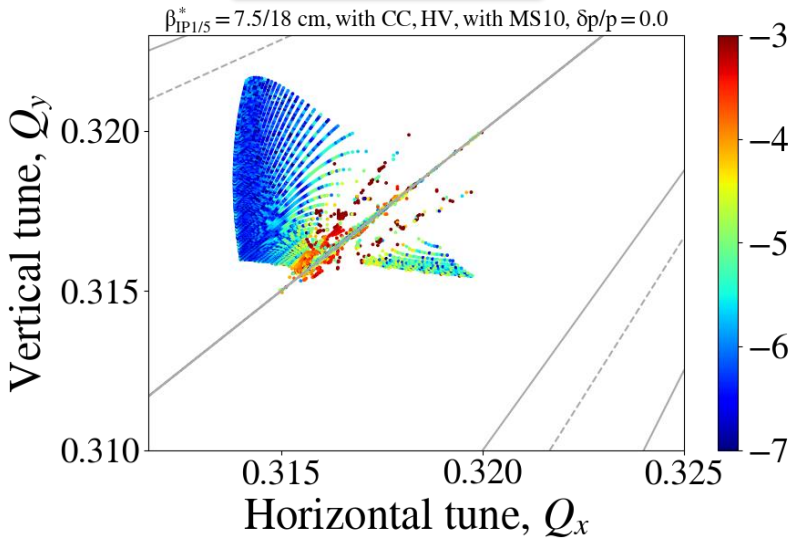
Without beam-beam

With MS10

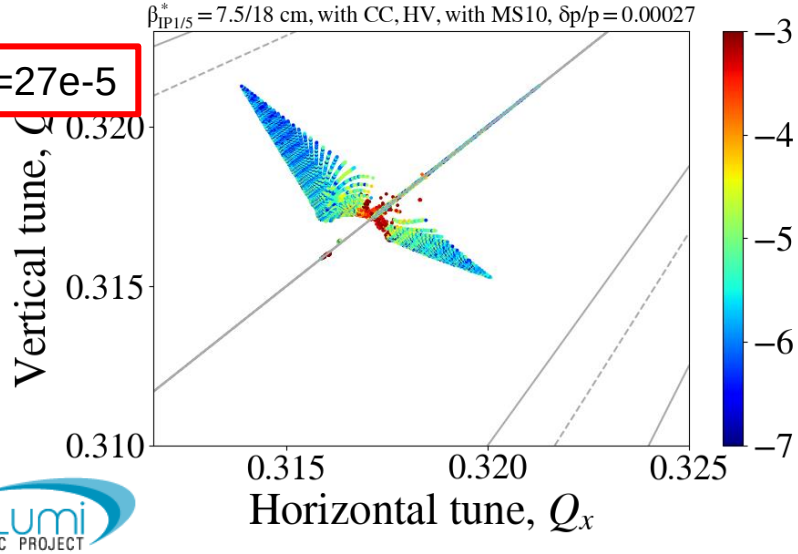
Without MS10

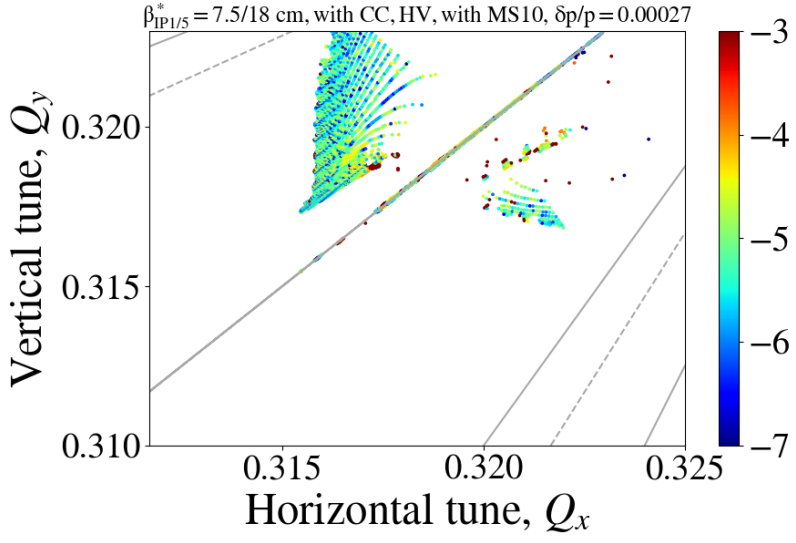
Δp/p=0





Δp/p=27e-5





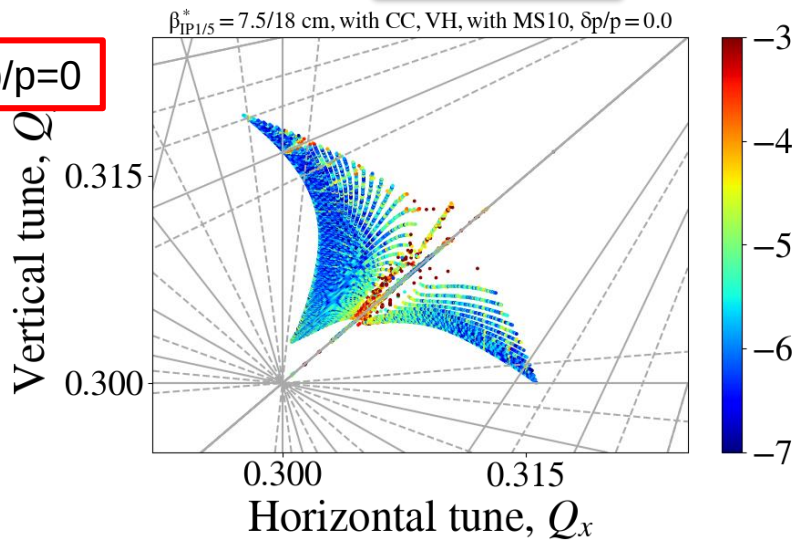
β^*=7.5/18 cm, VH, with CC

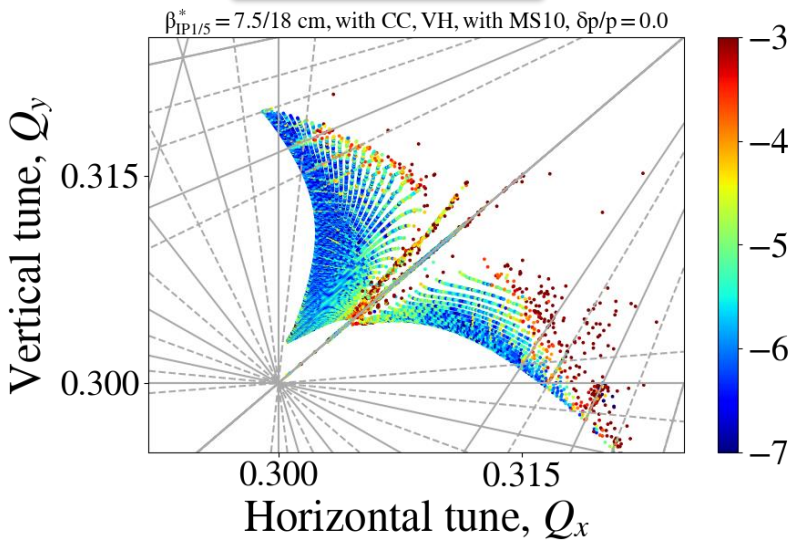
With beam-beam

With MS10

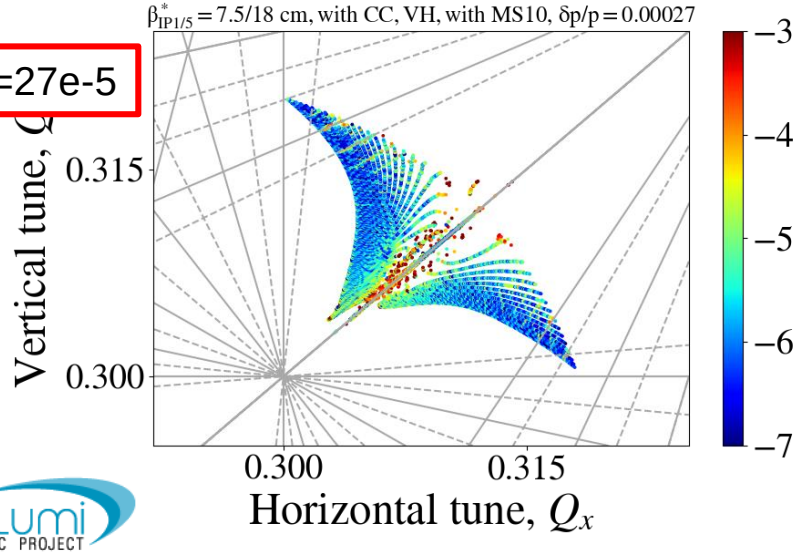
Without MS10

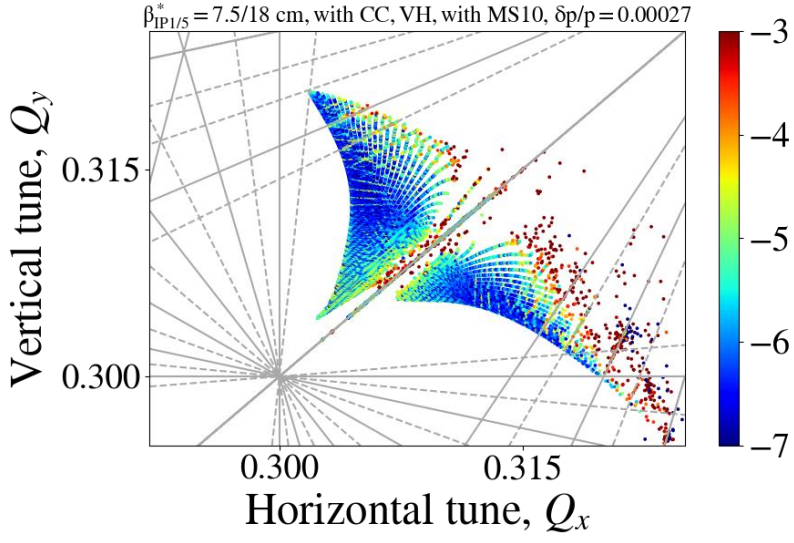
Δp/p=0





Δp/p=27e-5





Summary

Studied impact of "noMS10" on DA with flat optics for EOL:

- Studies with 7.5/30 cm without CC and 7.5/18 cm with CC (HV & VH crossing).
- Important DA degradation: from a situation where the DA target was comfortably achieved for all optics to a situation where a a limited number or no working point can be found that meets DA target → Absence of M10 more important for flat optics than round.
- As was done with round optics, investigated the role of chromatic coupling: without BB, increase of chromatic coupling in "noMS10", visible impact on FMAs. No clear impact of chromatic coupling with BB, DA degradation to be further understood.

Backup slides

FMAs without BB, with octupoles

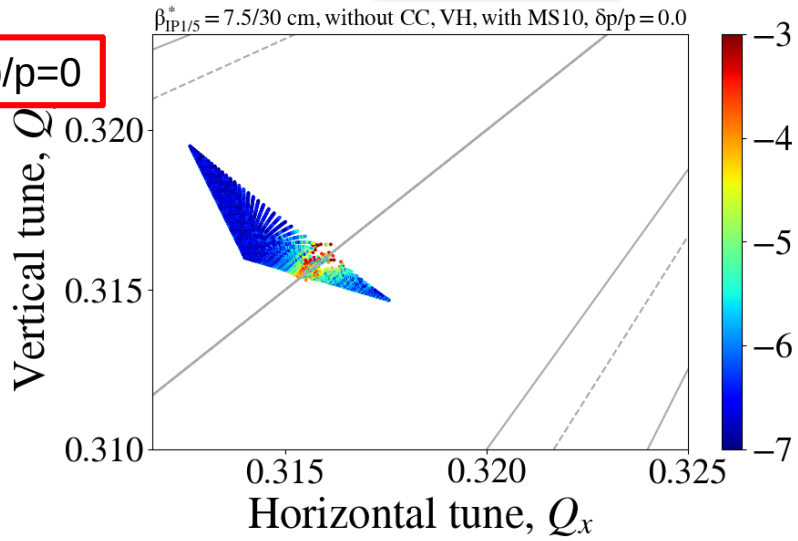
β*=7.5/30 cm, no CC

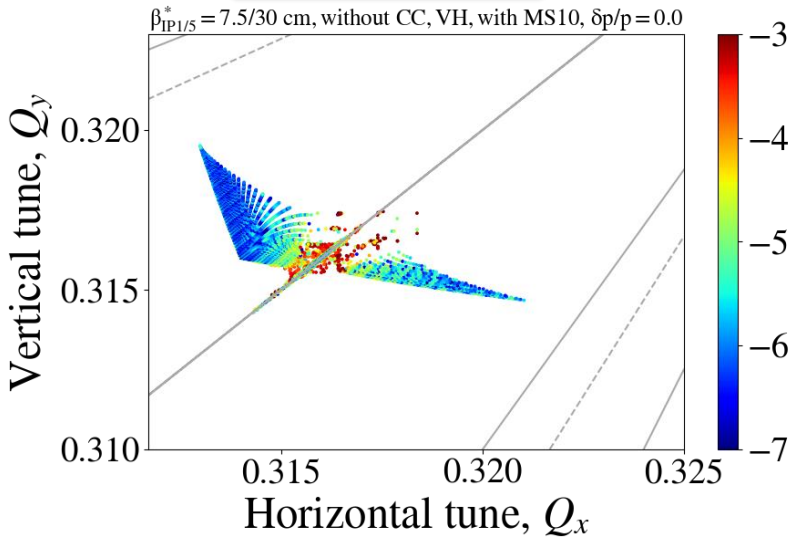
Without beam-beam

With MS10

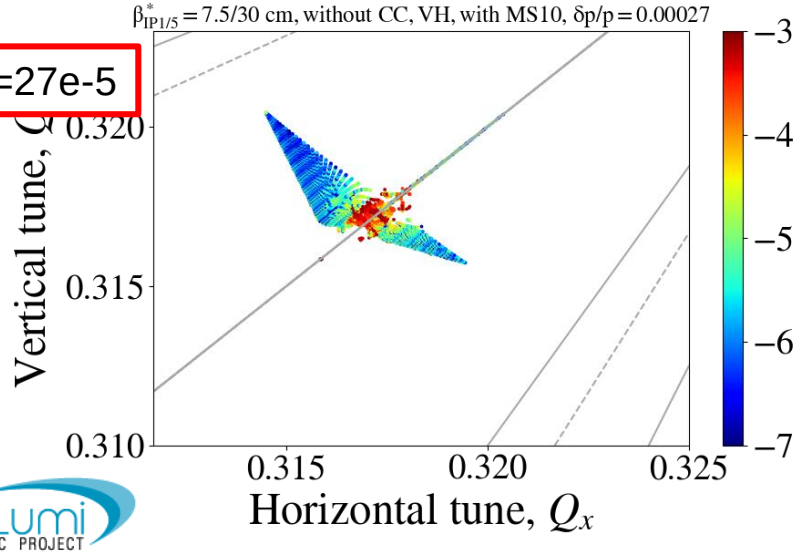
Without MS10

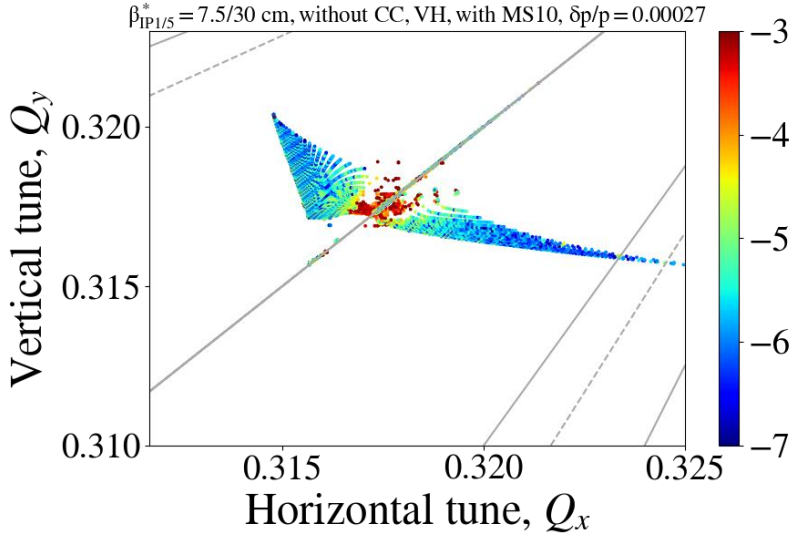
Δp/p=0





Δp/p=27e-5





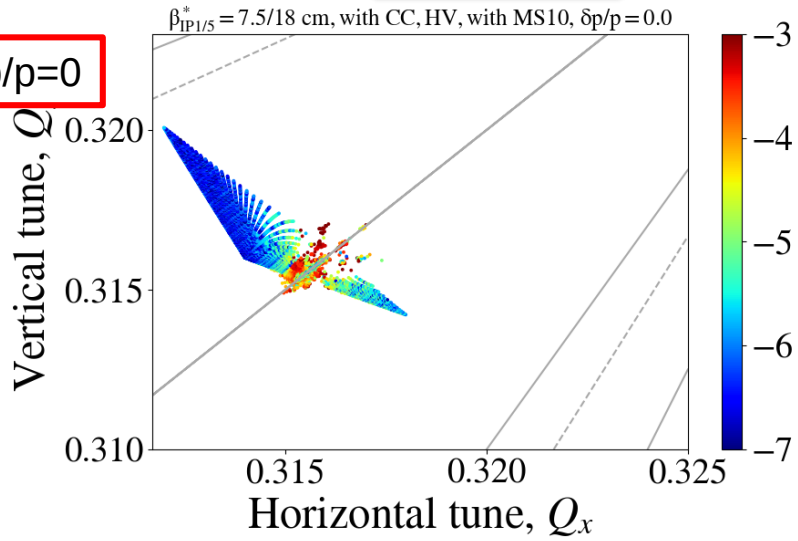
β*=7.5/18 cm, HV, with CC

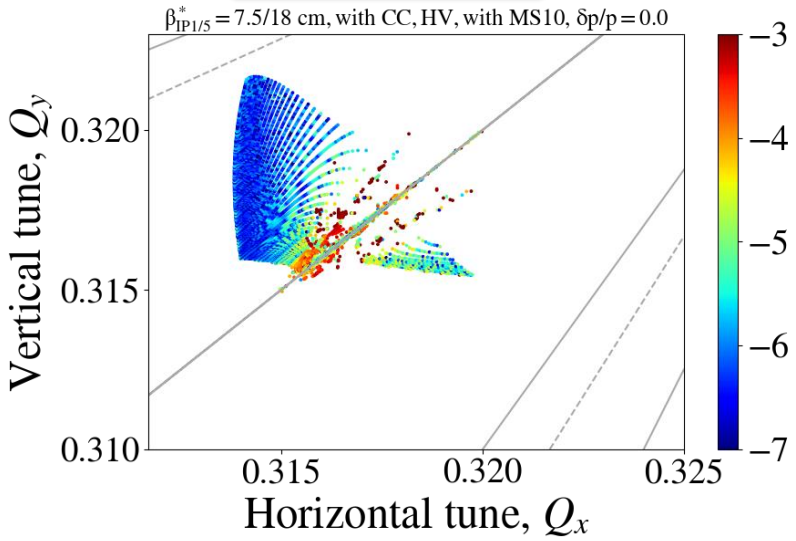
Without beam-beam

With MS10

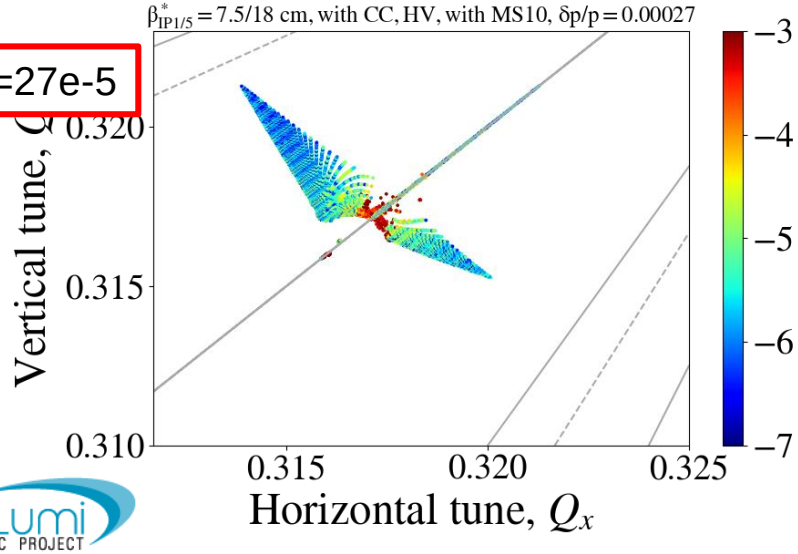
Without MS10

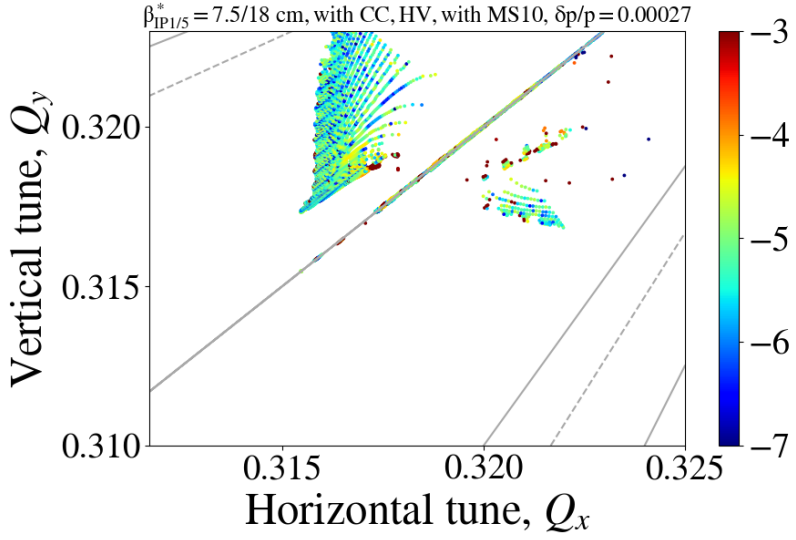
Δp/p=0





Δp/p=27e-5





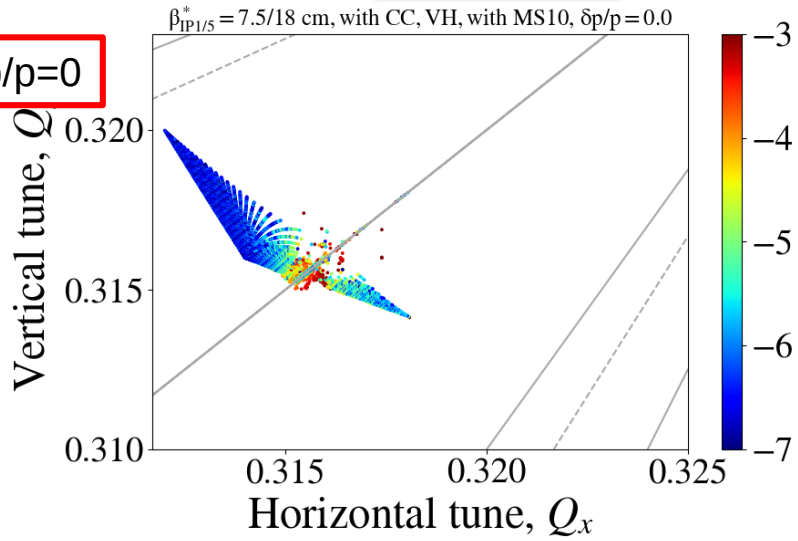
β*=7.5/18 cm, VH, with CC

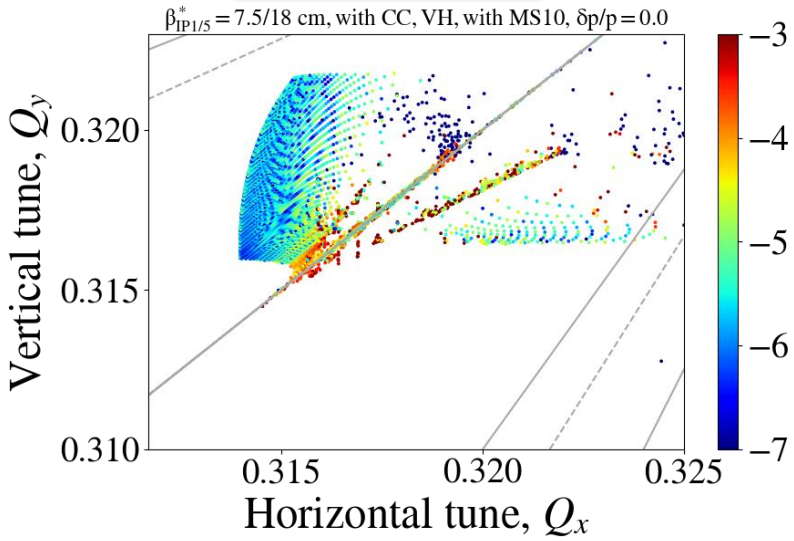
Without beam-beam

With MS10

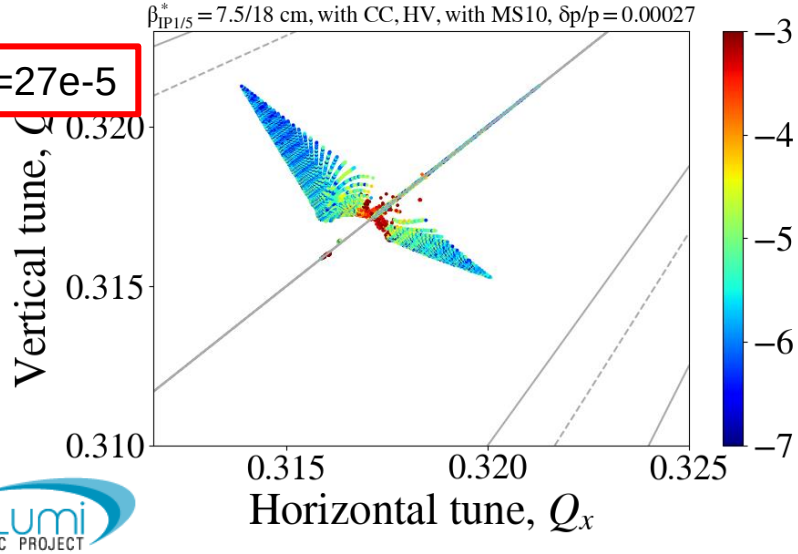
Without MS10

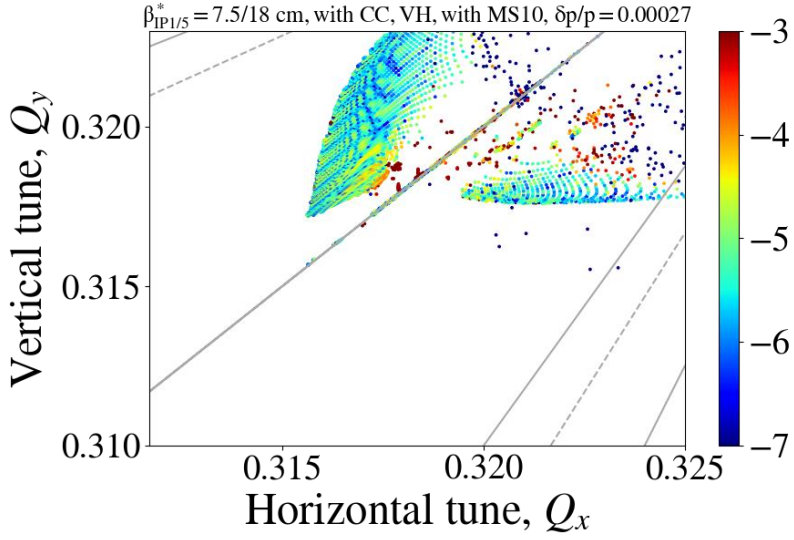
Δp/p=0





Δp/p=27e-5





FMAs with BB, with octupoles

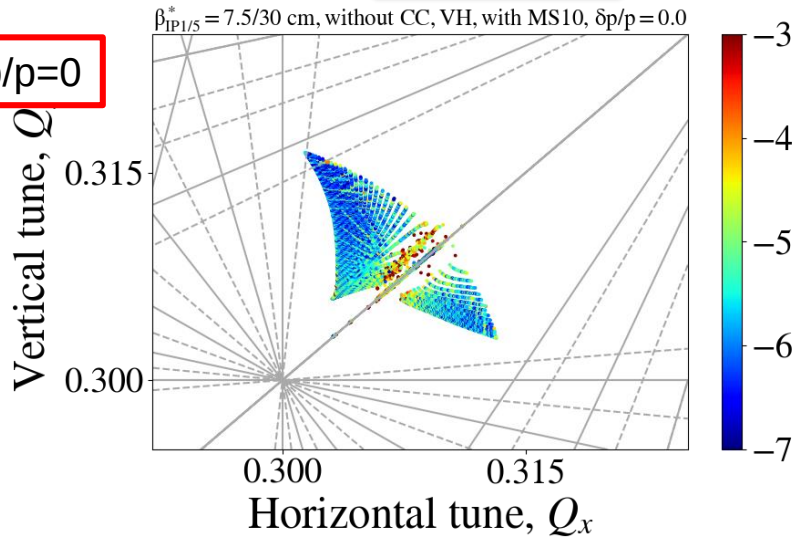
β*=7.5/30 cm, no CC

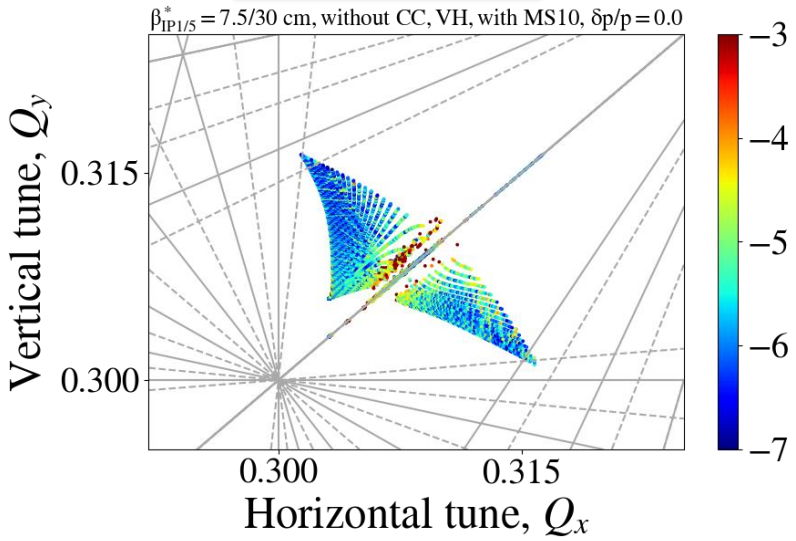
With beam-beam

With MS10

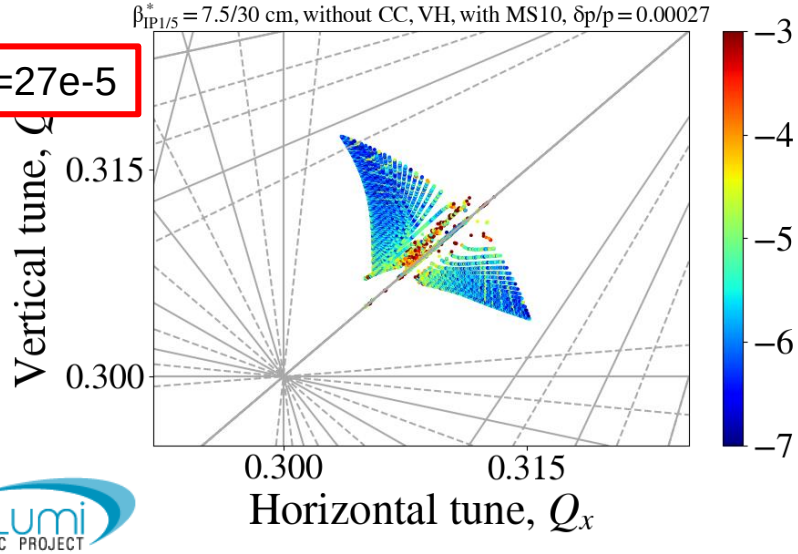
Without MS10

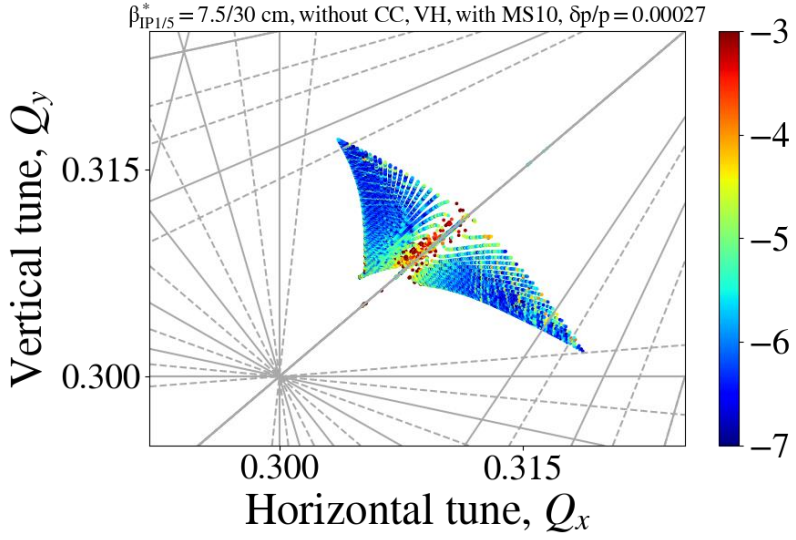
Δp/p=0





Δp/p=27e-5





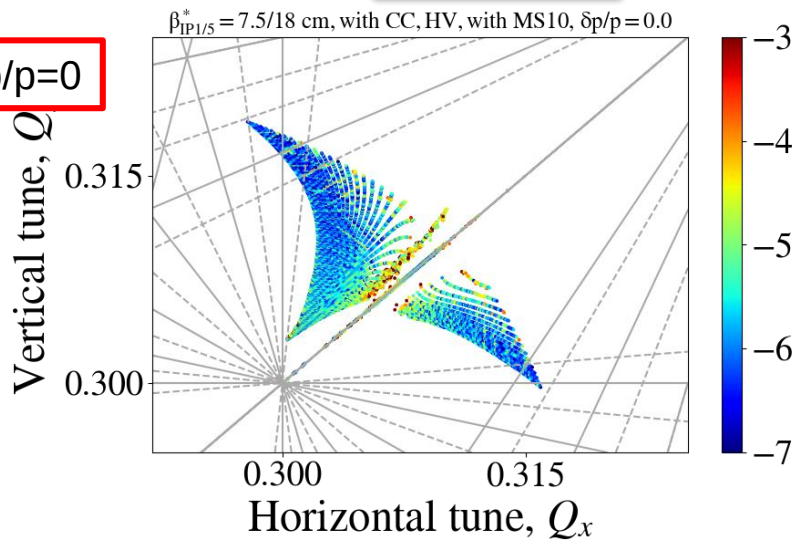
β*=7.5/18 cm, HV, with CC

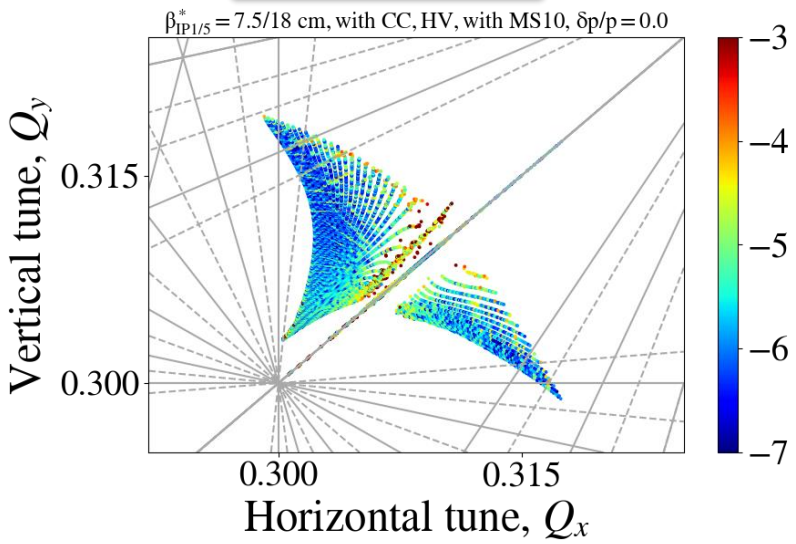
With beam-beam

With MS10

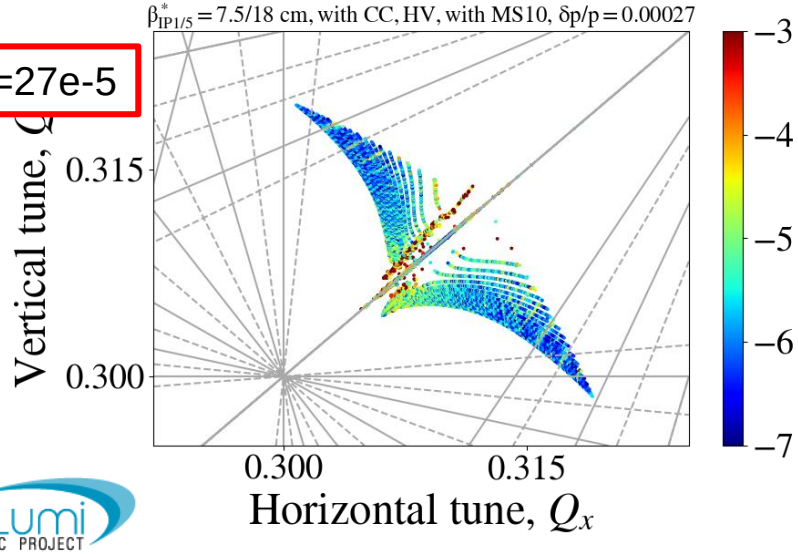
Without MS10

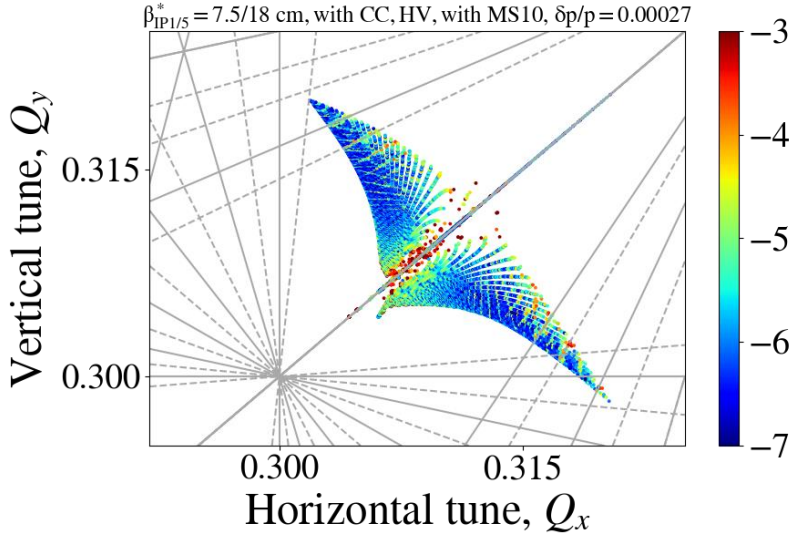
Δp/p=0





Δp/p=27e-5





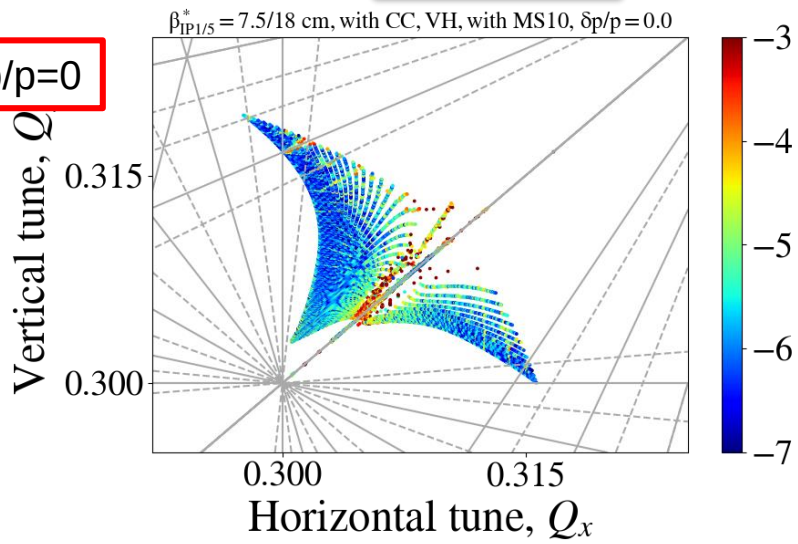
β^*=7.5/18 cm, VH, with CC

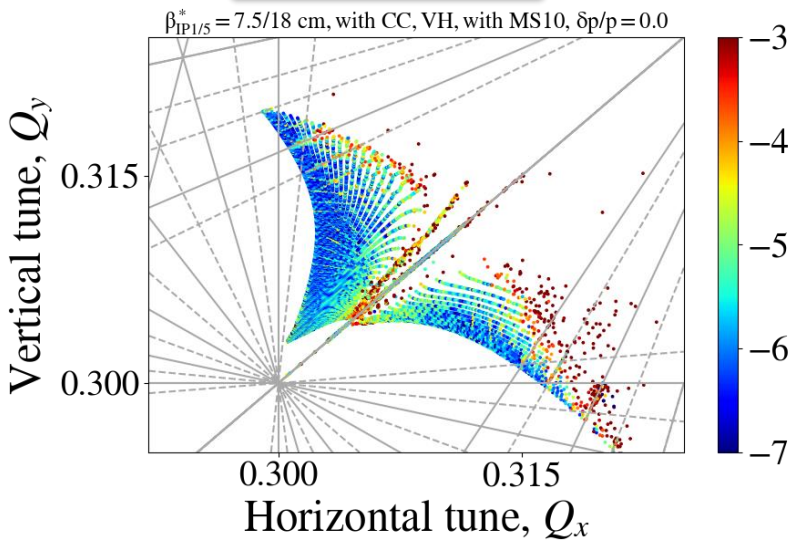
With beam-beam

With MS10

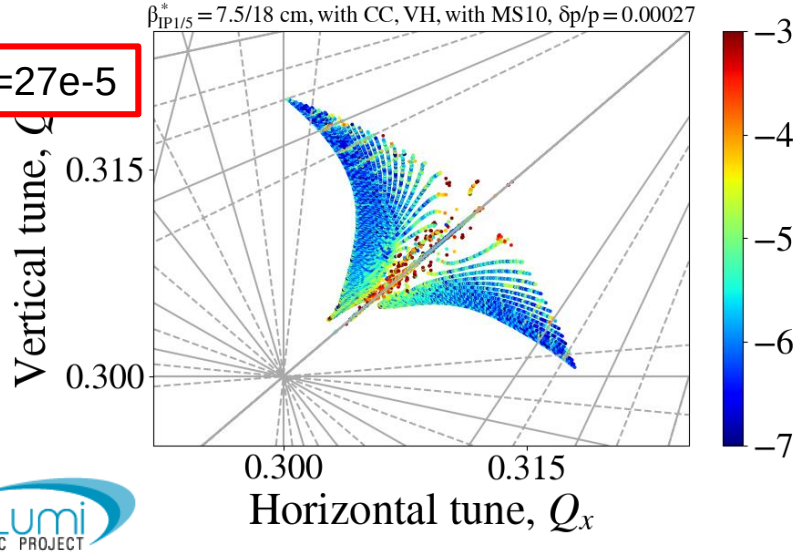
Without MS10

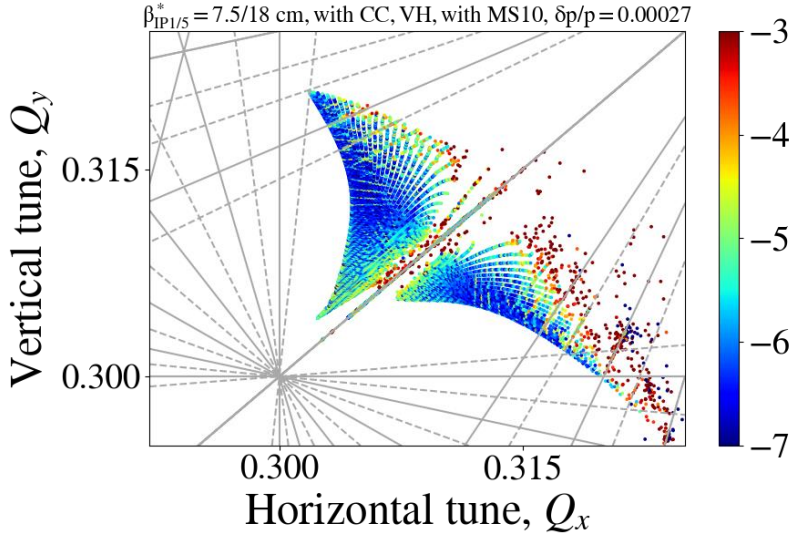
Δp/p=0





Δp/p=27e-5





FMAs with BB, without octupoles

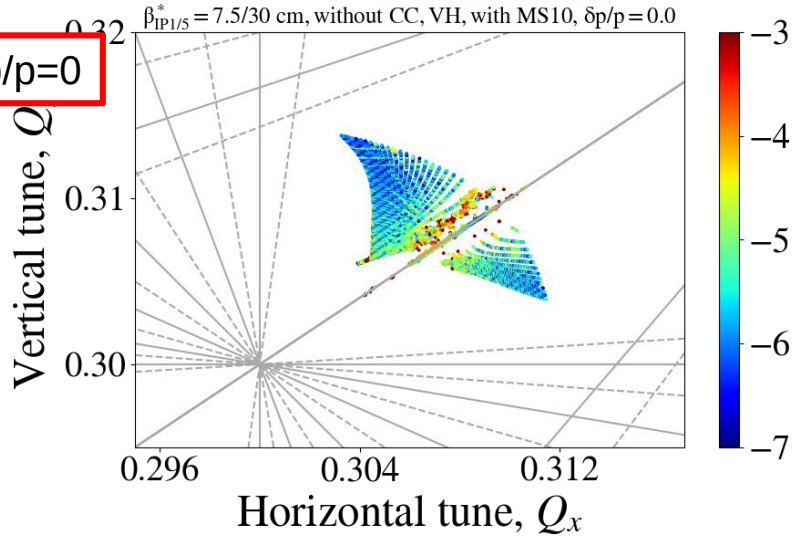
β*=7.5/30 cm, no CC

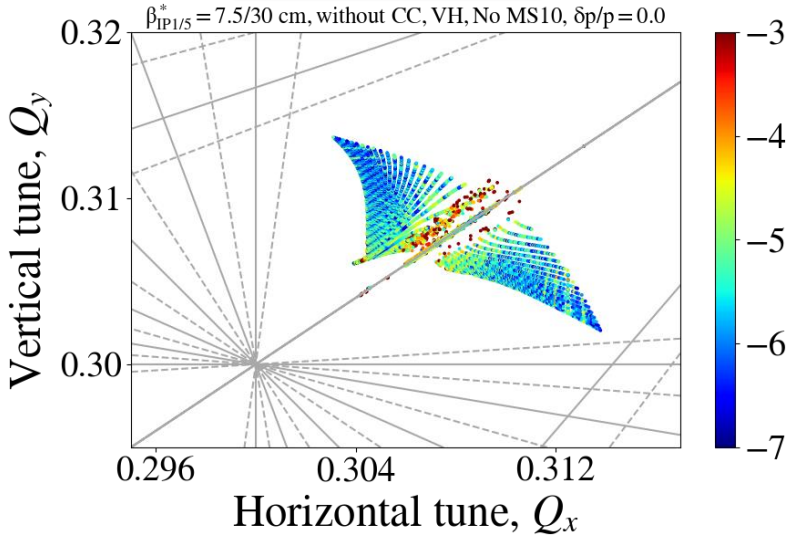
With beam-beam

With MS10

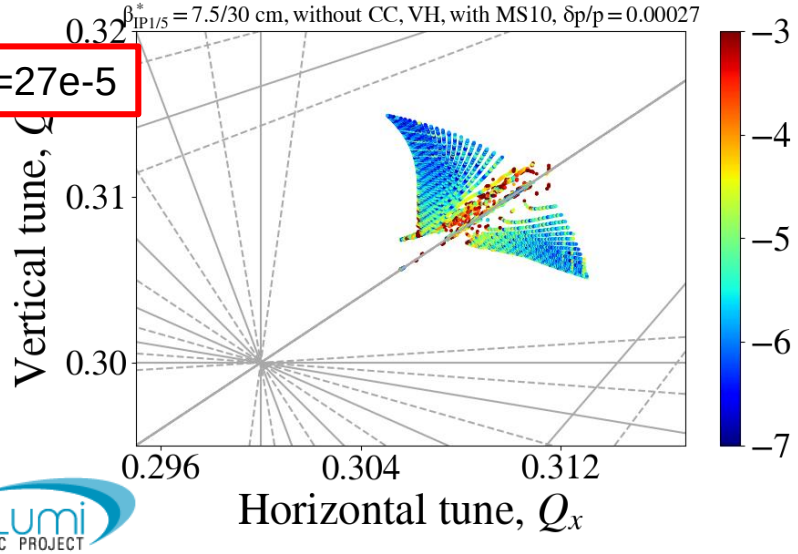
Without MS10

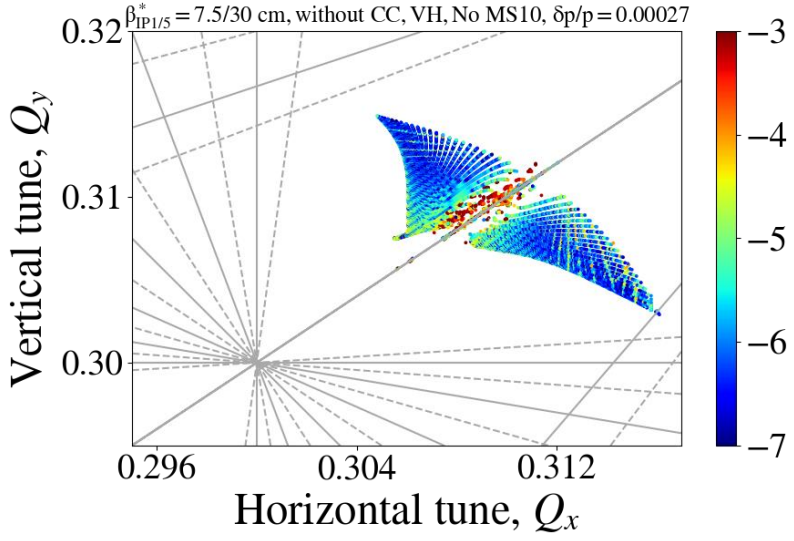
Δp/p=0





Δp/p=27e-5





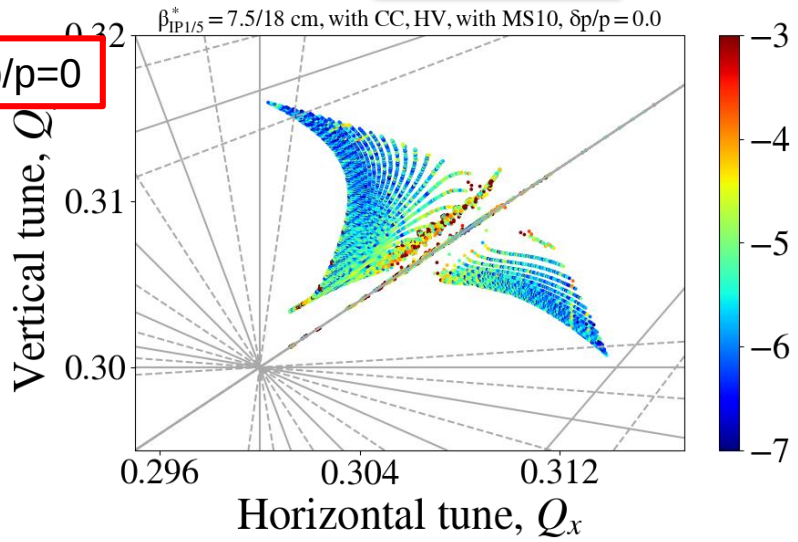
β*=7.5/18 cm, HV, with CC

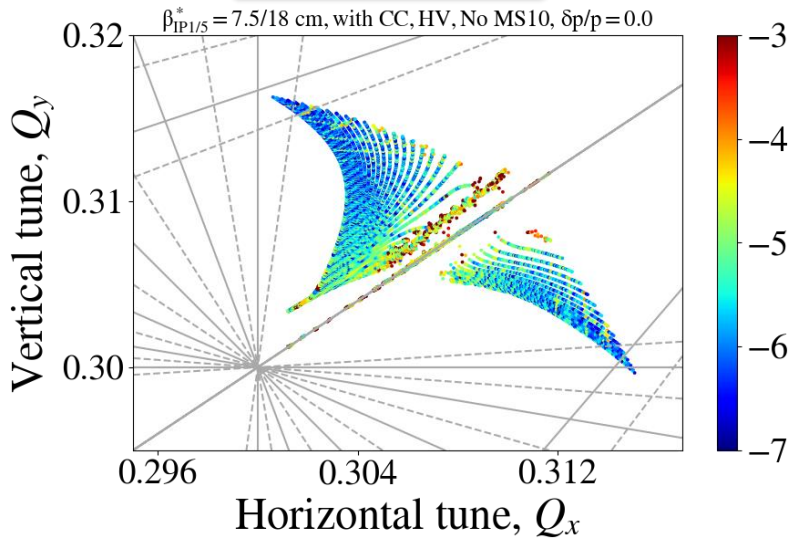
With beam-beam

With MS10

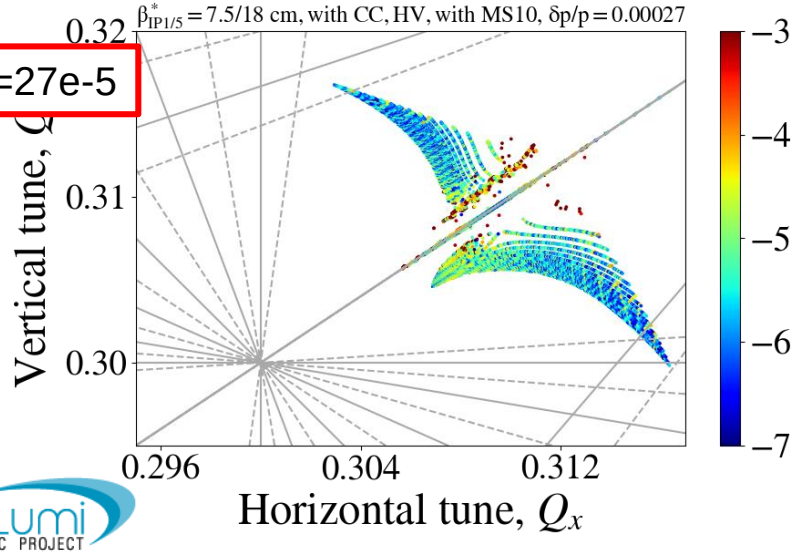
Without MS10

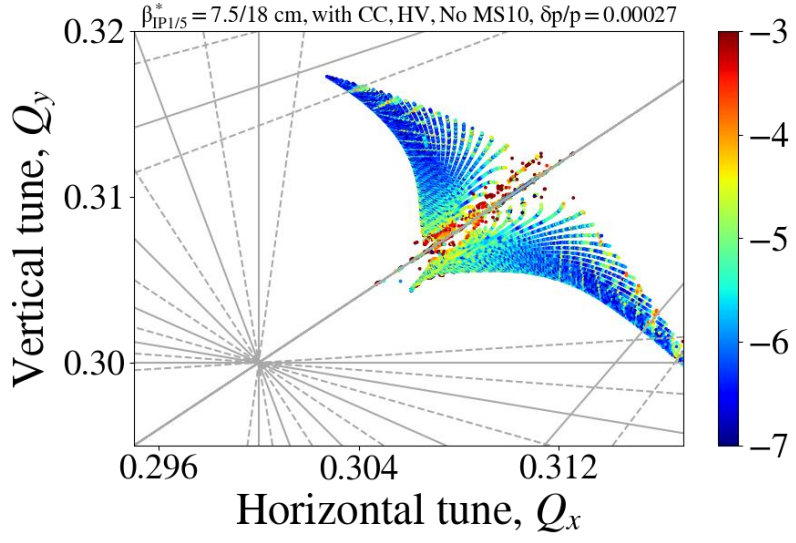
Δp/p=0





Δp/p=27e-5





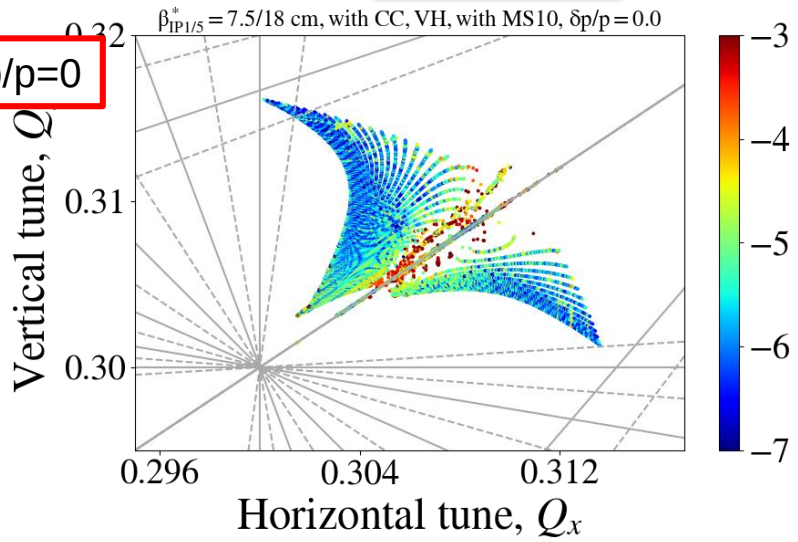
β^*=7.5/18 cm, VH, with CC

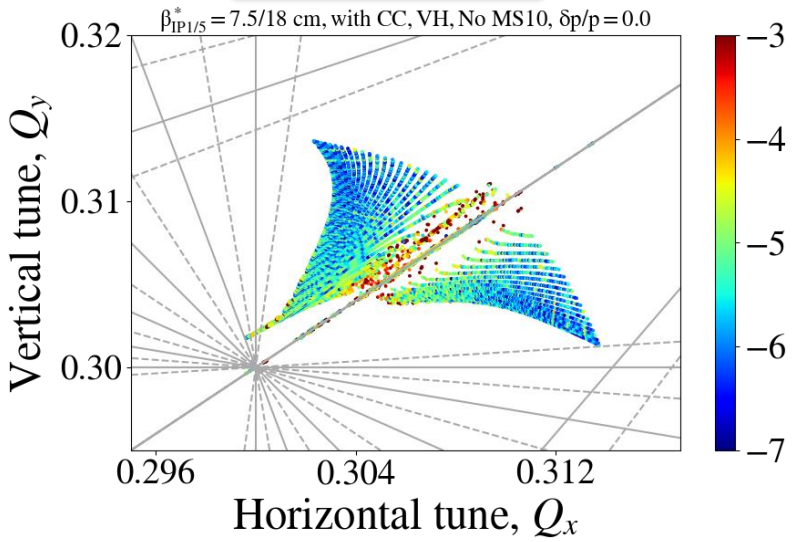
With beam-beam

With MS10

Without MS10

Δp/p=0





Δp/p=27e-5