



# Ramp development

## configuration

$\beta^*=10\text{m}$  at injection

$\beta^*=5\text{m}$  at transition

$\beta^*=0.85\text{-}0.90\text{m}^*$  Star and Phenix,  $\beta^*=3\text{m}$  Phobos, Brahms - in collision

\* Work on a ramp with  $\beta^*=0.85\text{-}0.9\text{ m}$  in Phenix (Star), back-up 1m

## working point

recommendation/retreat  $\rightarrow$  SPS-like tune ( $\sim 0.69$ )

Not verified with ions at store in operations – back-up solution  $\sim 0.23$

## Operational ramp development

- Improved decoupling on the ramp, at store
- Tune feed-forward on ramp, PLL
- Ramp revert capability
- Faster down-ramp

## Online model improvements

- Tune/coupling prediction from orbit bumps
- Online matching capability
- Add experimental magnets
- Quartic start of  $\beta$  ramp. Separate PS tracking and transition.
- Reduce PS tracking errors at flattop. Slow down flattop approach.
- Fix chromaticity mismatch. Fix remaining 0.3% of TF error.