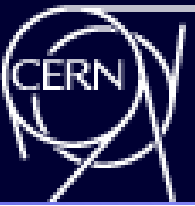
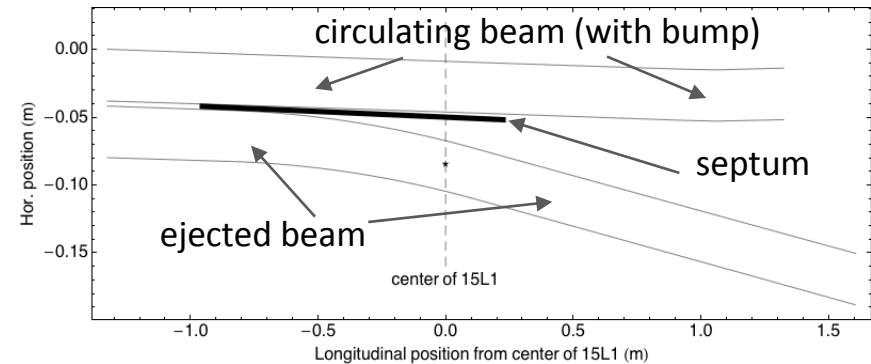


PPM Modulation of the PSB to PS Transfer Energy

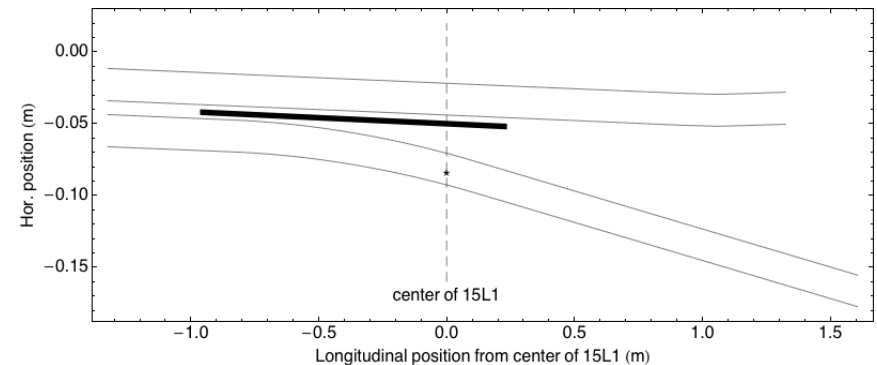
A cost effective PSB Upgrade Option



- BTP upgrade for PPM operation
 - ◆ Moderate cost, operational flexibility
 - ◆ Bright LHC beams delivered to PS with 2 GeV
 - ◆ Other beams transferred to PS with 1.4 GeV
- Ejection and recombination of LHC beams at 2 GeV possible with present kickers (savings)
- Transparent for other beams in the Booster
 - ◆ No issues with bunch splitting of high intensity beams at 2 GeV (short flat-top and slow synchrotron motion)
 - ◆ No impact on radiation issues at PS injection
- Solution for PS injection of high intensity beams at 2 GeV not yet found
- Issues related to rms current of PSB power supply mitigated
- Possible impact of PSB 2 GeV upgrade on magnet life-time mitigated



Booster ejection of high intensity beams at 1.4 GeV (present situation)



Booster ejection of LHC beams at 2 GeV
With existing kickers

- smaller kicks sufficient for small beams
- stronger ejection bumpers required
- recombination similar