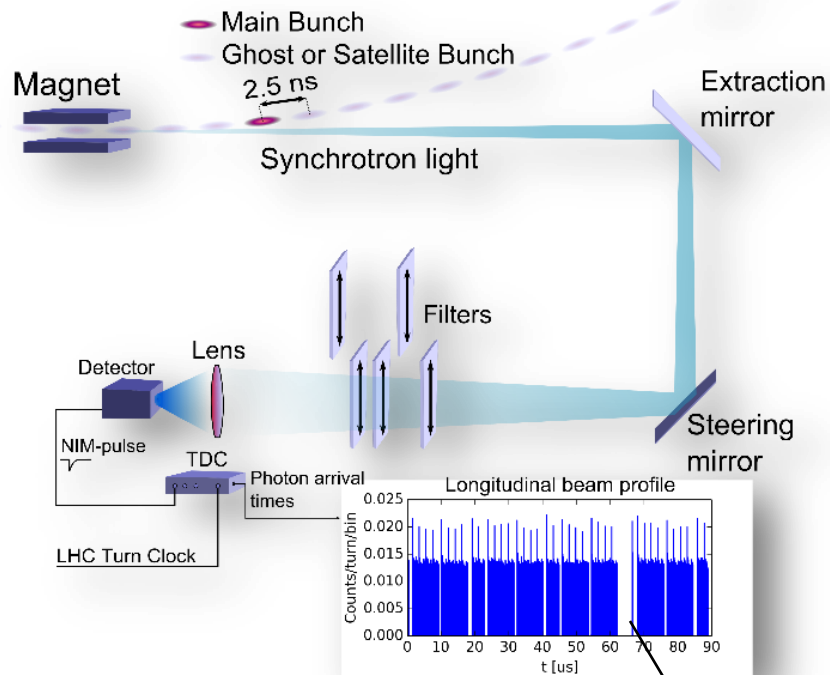


BSRL: Beam Synchrotron Radiation - Longitudinal

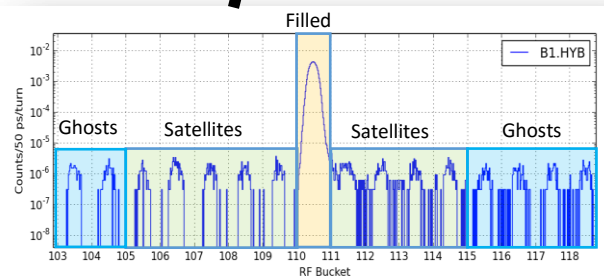


Temporal profiles of LHC beams

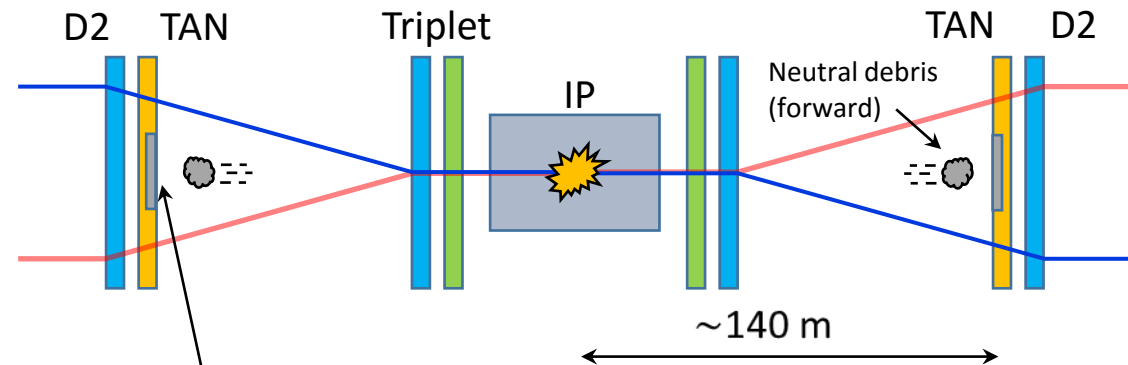
Complement to FBCT and DCCT: measure charge in nominally empty RF-buckets

Dynamic range: 5 orders of magnitude

Example use cases: Luminosity calibration, assess LHC injection quality



BRAN: Beam Rate of Neutrals



BRAN: Left of IP 1



Machine luminosity monitors

Ionization chambers (IC) / Cherenkov light monitors

Challenges: large dynamic range, radiation, space constraints

Example use cases: Finding collisions, OP backup for experiment luminosity