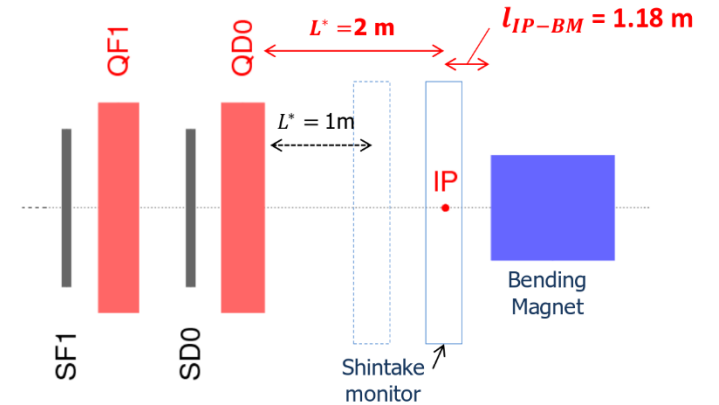


Proposal of testing the long L* feasibility for CLIC at ATF2

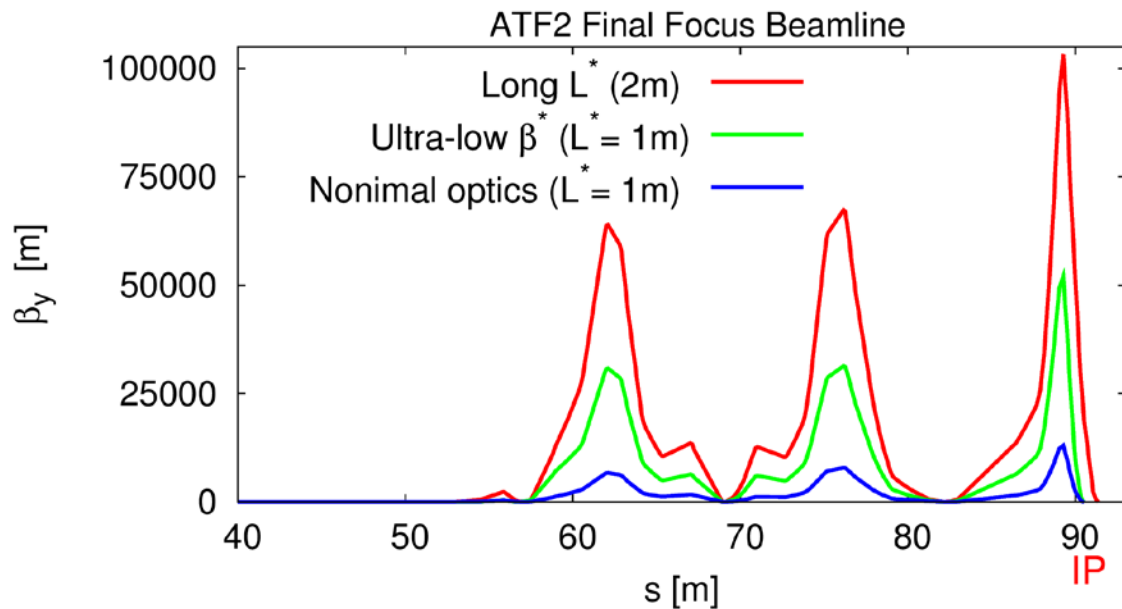
- CLIC IR design is converging towards a **new detector model *CLICdet_2015*** with QD0 moved in the tunnel away from the influence of the detector vibrations and solenoid field leading to increase the L* from 3.5m to **6m**
- The **BDS beamline have been optimized for L*=6m** and simulations fulfill the performance requirements for CLIC
- The long L* design should make the machine **more challenging to operate** therefore several points need to be proved **experimentally** to check its feasibility :
 - *Chromaticity correction at the IP*
 - *Mitigation of imperfections → TUNING*
 - *Stabilization of the beam to the nanometer level at the IP*
 - *Influence of wakefields*
 - *Impact of ground motion on the beam size*
- In the scenario where all the Goals of ATF2 are achieved soon , long L* study could be considered in the future with the goal of **recovering the same beam size for the nominal and the long L* option**

Proposal of testing the long L^* feasibility for CLIC at ATF2

- Increase the L^* of ATF2 from 1m to **2m** → The main technical challenge for ATF2 will be to **move the Shintake monitor by 1m**, but seems feasible



- **Optimization of the optics** strength for this new configuration



Parameters	Chromaticity ξ_y	β_y^* [mm]	β_y^{QD0} [m]
ATF2 nominal optics $L^*=1m$	10 000	0.1	~ 10 000
ATF2 Ultra-low β^* $L^*=1m$	40 000	0.025	~ 40 000
ATF2 Half- β^* $L^*=1m$	20 000	0.05	~ 20 000
ATF2 $L^*=2m$ Half-β^*	40 000	0.05	~ 80 000
ATF2 $L^*=2m$ nom-β^*	20 000	0.1	~ 40 000
CLIC 3TeV $L^*=3.5m$	50 000	0.07	~ 175 000
CLIC 3TeV $L^*=6m$	60 000	0.1	~ 360 000
CLIC 380GeV $L^*=4.3m$	43 000	0.1	~ 185 000
CLIC 380GeV $L^*=6m$	60 000	0.1	~ 360 000

QD0 Aperture has to be increased by 5mm at least

- Long L^* option allows also the demonstration of the **feasibility of CLIC chromaticity level** with larger $\beta_{x,y}^*$

- The lattice for this configuration **still need to be proved by simulation and many other technical considerations have to be studied during the next 2 years** in order to check the feasibility of this project