Nano BPM collaboration Plans

Establishment of nano-meter resolution

Phase-I : Stabilization of two isolated systems

Phase-II : Fast feedforward/feedback tests

Demonstration of nanometer stabilization at IR.

T.Tauchi, 2nd mini-workshop, Nov.2003

Nano-meter resolution

- Prototype of movers (Y' and integrated X,X')
- 3 mover systems (control by the reference system, inertia sensor, optical anchor)
- Reference system for relative displacement of 3 BPMs
- Girder (granite table)
- 3 cavity BPMs
- Electronics of BPMs
- Readout system (ADC, VME...)

GM measurements

μm Feedforward ?

Phase-I :Stabilization of two isolated systems

- Three Major Stabilization Schemes
- "local" : inertia sensor system (f > 1Hz)
- "remote" : optical anchor system
- "passive" : a common girder (granite table of 3m length) like as a support tube
- "remote" or "passive"

ATF beam must be the reference line!

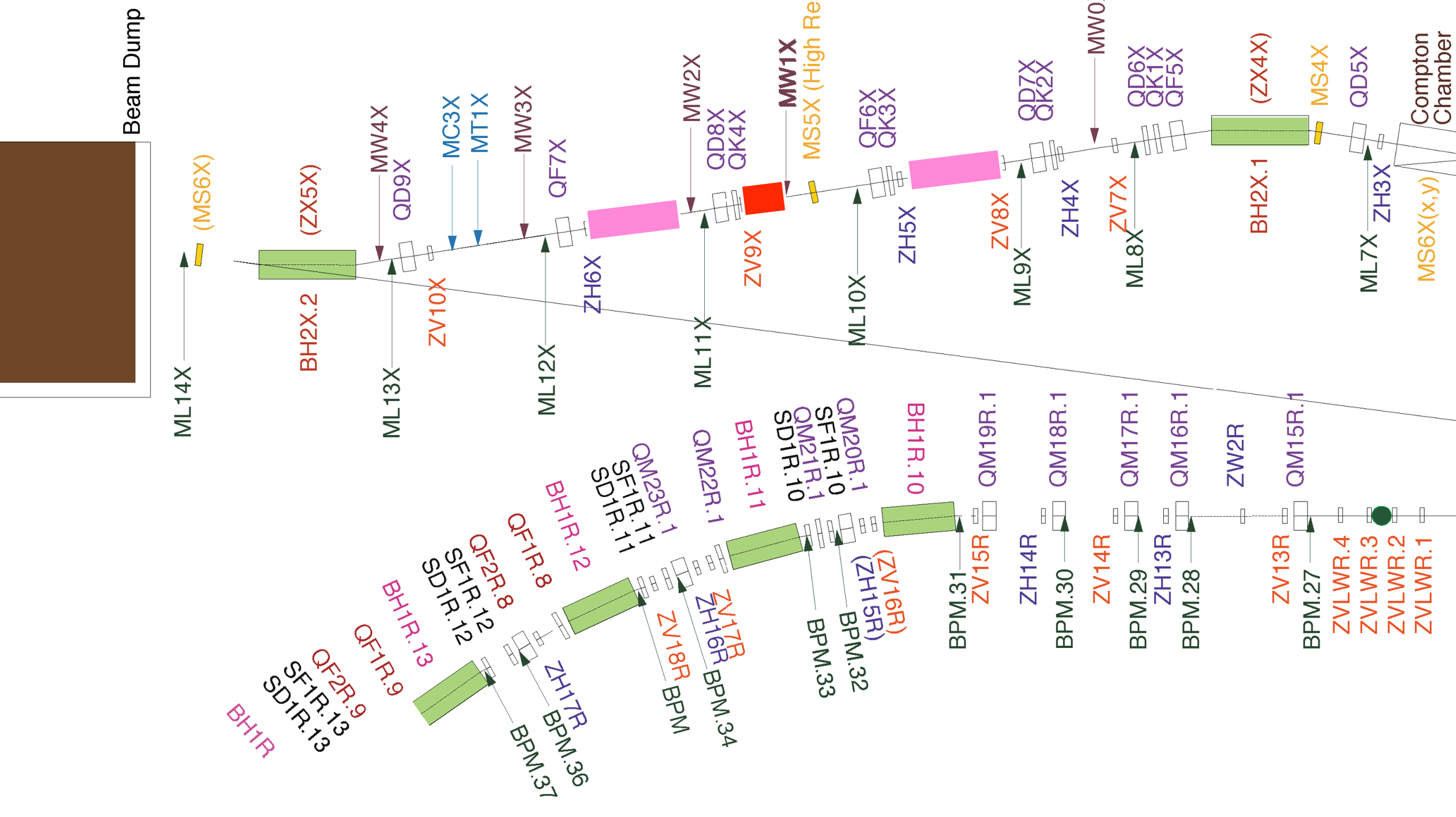
Phase-II : Fast feedforward/ feedback tests

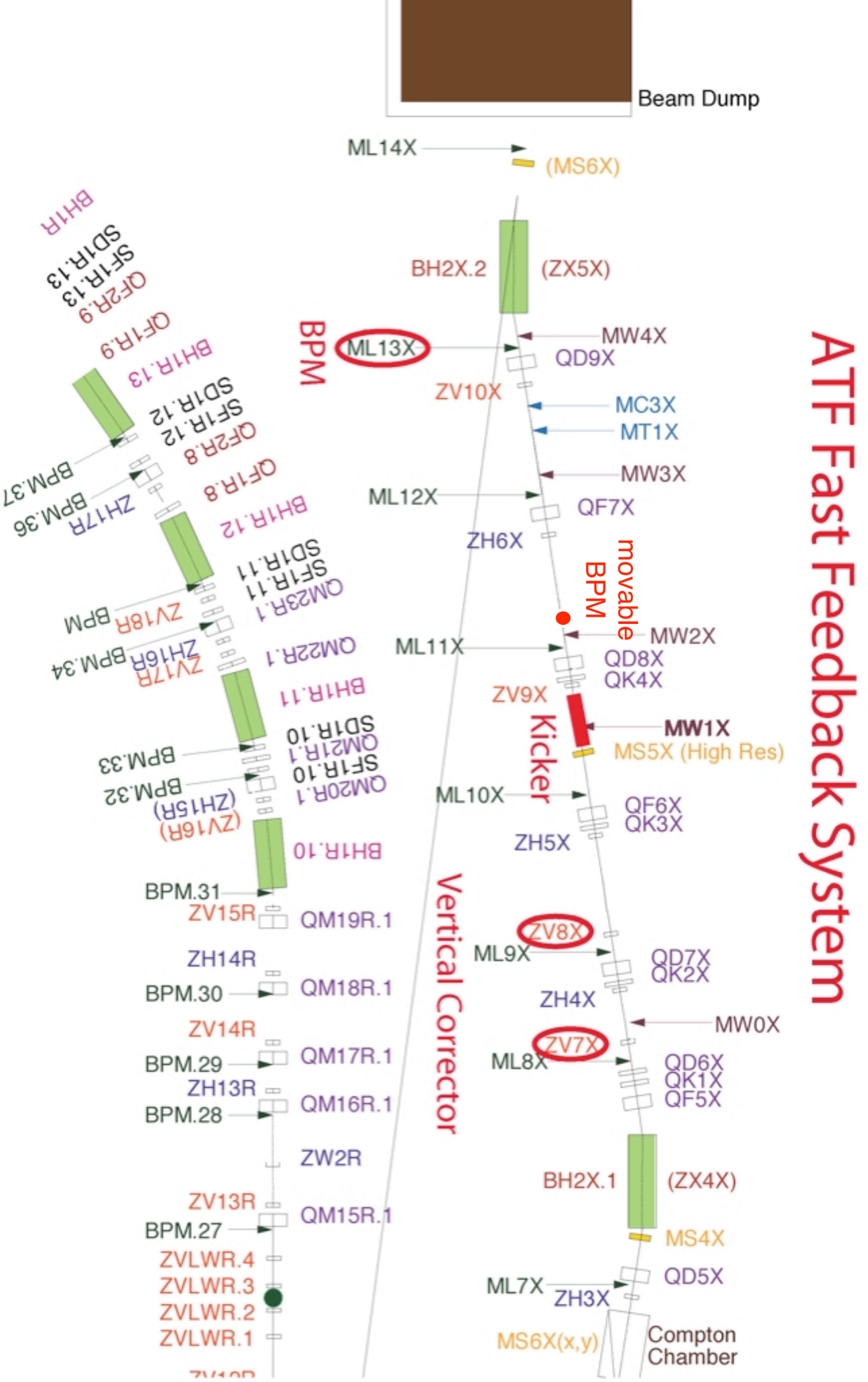
- Demonstration of beam control at nano-meter level.
- FEATHER and FONT systems
- Multi-train extraction

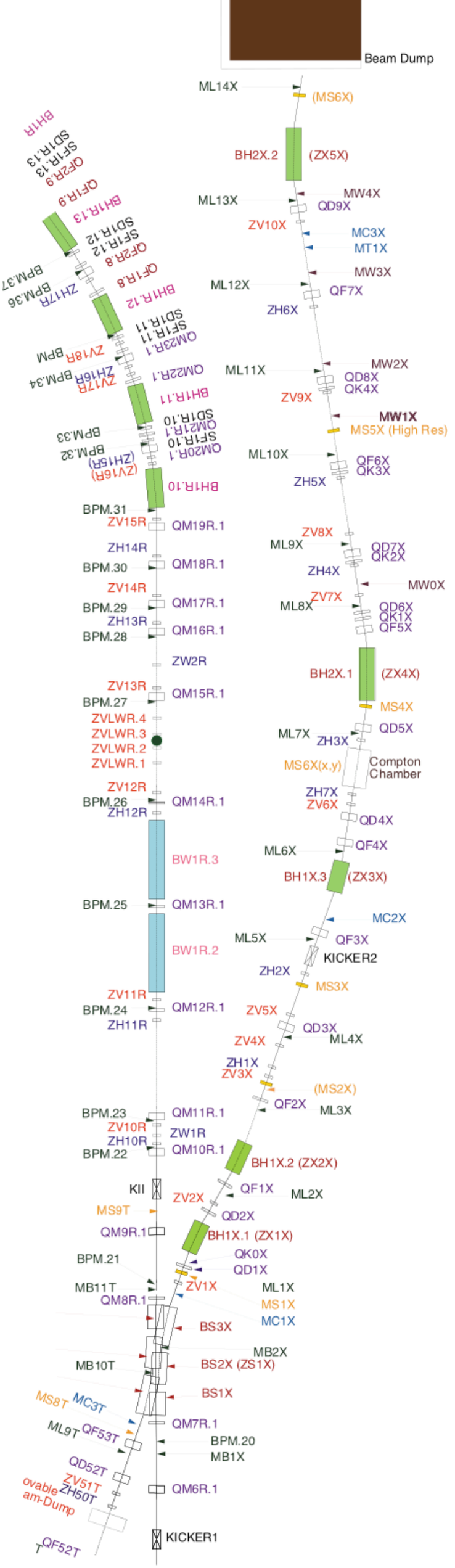
Layout

Pol.e+ area for optical anchor?

2m between Q (face to face)
Q is 18cm thick.




Beam Dump
ML14X
(MS6X)
BH2X.2
(ZX5X)
BPM
ML13X
MW4X
QD9X
ZV10X
MC3X
MT1X
MW3X
ML12X
QF7X
ZH6X
movable
BPM
MW2X
ML11X
QD8X
QK4X
ZV9X
Kicker
MW1X
MS5X (High Res)
ML10X
QF6X
QK3X
ZH5X
Vertical Corrector
ZV8X
ML9X
QD7X
QK2X
ZH4X
MW0X
ZV7X
ML8X
QD6X
QK1X
QF5X
BH2X.1
(ZX4X)
MS4X
QD5X
ML7X
ZH3X
MS6X(x,y)
Compton
Chamber
ATF Fast Feedback System
BH1R
SD1R.13
SF1R.13
QF2R.9
QF1R.9
BH1R.13
SD1R.12
SF1R.12
QF2R.8
QF1R.8
BH1R.12
BPM.37
BPM.36
ZH17R
SD1R.11
SF1R.11
QM23R.1
BPM
ZV18R
BPM.34
ZH16R
ZV17R
QM22R.1
BH1R.11
SD1R.10
SF1R.10
QM21R.1
QM20R.1
BPM.33
BPM.32
(ZH15R)
(ZV16R)
BH1R.10
BPM.31
ZV15R
QM19R.1
ZH14R
BPM.30
QM18R.1
ZV14R
BPM.29
QM17R.1
ZH13R
BPM.28
QM16R.1
ZW2R
ZV13R
QM15R.1
BPM.27
ZVLWR.4
ZVLWR.3
ZVLWR.2
ZVLWR.1


Beam Dump
ML14X
(MS6X)
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MW4X
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ZV10X
MC3X
MT1X
MW3X
ML12X
QF7X
ZH6X
ML11X
MW2X
QD8X
QK4X
ZV9X
MW1X
MS5X (High Res)
ML10X
QF6X
QK3X
ZH5X
ZV8X
ML9X
QD7X
QK2X
ZH4X
MW0X
ZV7X
ML8X
QD6X
QK1X
QF5X
BH2X.1
(ZX4X)
MS4X
QD5X
ML7X
ZH3X
MS6X(x,y)
Compton
Chamber
ZH7X
ZV6X
QD4X
QF4X
ML6X
BH1X.3
(ZX3X)
MC2X
ML5X
QF3X
KICKER2
ZH2X
MS3X
ZV5X
QD3X
ML4X
ZV4X
ZH1X
ZV3X
(MS2X)
QF2X
ML3X
BH1X.2 (ZX2X)
QF1X
ML2X
ZV2X
QD2X
BH1X.1 (ZX1X)
QK0X
QD1X
ZV1X
ML1X
MS1X
MC1X
BS3X
MB2X
BS2X (ZS1X)
BS1X
QM7R.1
BPM.20
MB1X
QM6R.1
KICKER1
QF52T
T
MS8T
MC3T
ML9T
QF53T
QD52T
ZV51T
ZH50T
ovable
am-Dump
BH1R
SD1R.13
SF1R.13
QF2R.9
QF1R.9
BH1R.13
SD1R.12
SF1R.12
QF2R.8
QF1R.8
BH1R.12
SD1R.11
SF1R.11
QM23R.1
ZV18R
BPM
ZH16R
BPM.34
ZV17R
QM22R.1
BH1R.11
SD1R.10
QM21R.1
SF1R.10
QM20R.1
BPM.33
BPM.32
(ZH15R)
(ZV16R)
BH1R.10
BPM.31
ZV15R
QM19R.1
ZH14R
BPM.30
QM18R.1
ZV14R
BPM.29
QM17R.1
ZH13R
BPM.28
QM16R.1
ZW2R
ZV13R
BPM.27
QM15R.1
ZVLWR.4
ZVLWR.3
ZVLWR.2
ZVLWR.1
ZV12R
BPM.26
QM14R.1
ZH12R
BW1R.3
BPM.25
QM13R.1
BW1R.2
ZV11R
BPM.24
QM12R.1
ZH11R
BPM.23
QM11R.1
ZV10R
ZW1R
ZH10R
BPM.22
QM10R.1
KII
MS9T
QM9R.1
BPM.21
MB11T
QM8R.1
MB10T
BPM.37
BPM.36
ZH17R

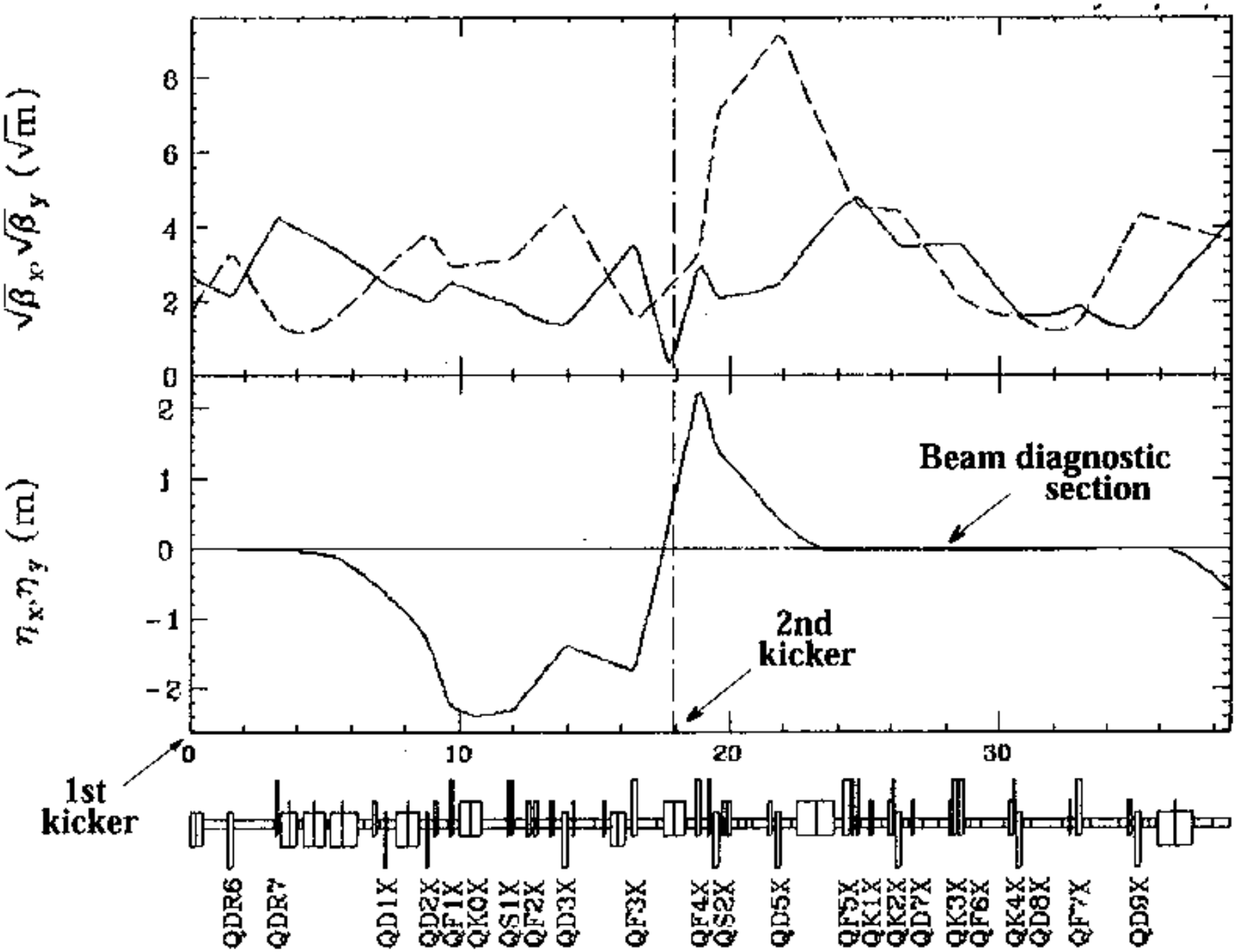

Figure 5: Optics of the extraction line; β function (top) and dispersion function (middle) are plotted. The solid and dotted lines show the horizontal and the vertical, respectively. It also shows the lattice from the first kicker to the end of extraction line(bottom).