FAIR
400 mm Beam Diagnostics

for pBar Separator and HEBT

Short summary for
the BINP@GSI Video Workshop

May 2020

compiled by A. Reiter

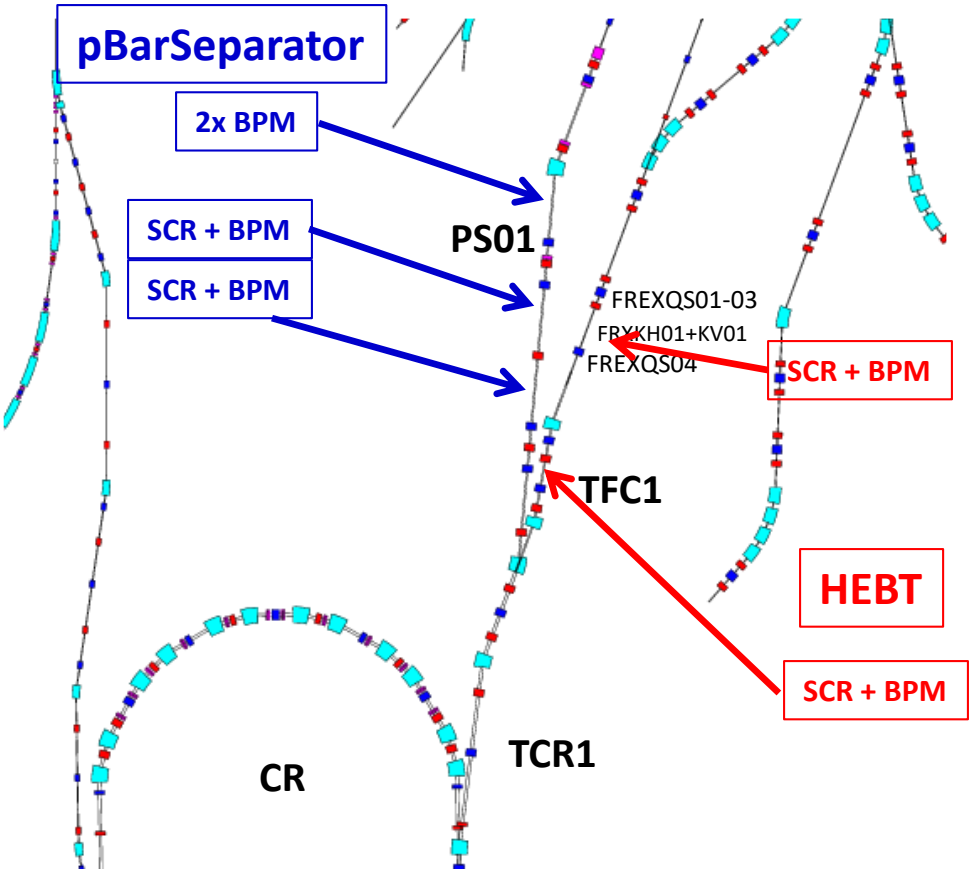
Overview 400 mm Beam Diagnostics

pBarSeparator PS01:

- **2x SCR, large design „ Type 1“**
- **3x BPM (400 x 200) mm, large design „Type 1“**
- **1x BPM (400 x 300) mm or (400 x 400) mm, as SFRS unit?**

HEBT beam lines FREX and TFC1

- **2 SCR, large design „Type 1“**
- **2x BPM (400 x 200) mm, large unit „Type 1“**



5x BPM (400 x 200) mm without corrector
1x BPM (400 x 300/400) mm
16x high-impedance pre-amplifiers for 4 BPMs

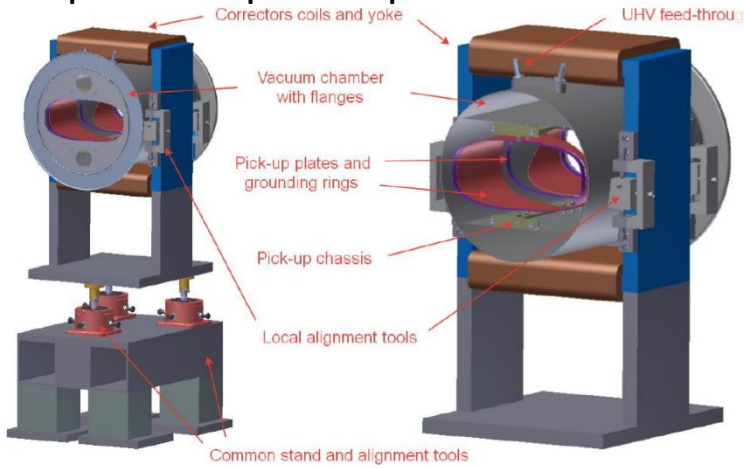
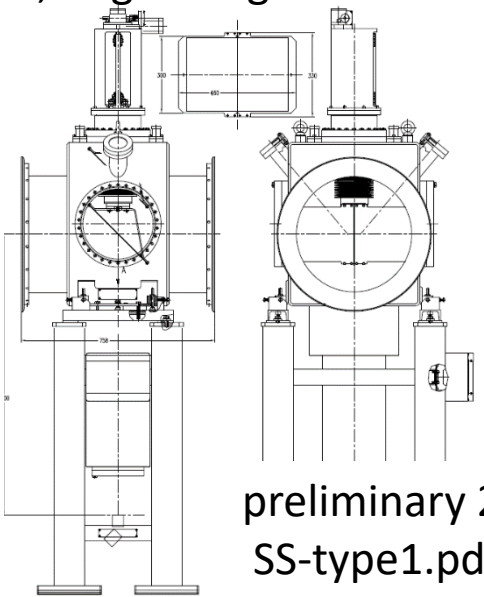


Figure 7: Preliminary 3D model of BPM "Type 1" inside corrector with vacuum vessel and stand.

4x SCR, large design with scintillator



preliminary 2D drawing:
SS-type1.pdf

Table of 400 mm Beam Diagnostics (BPMs and Screens)

A. Reiter 20th May 2020

Subproject	Det. type	No. of devices	PSP Code acc. to V7.16	Component	Aperture (mm x mm)	Comments
pBar Diagnostics	BPM	1	2.9.6.2.1.1	Pick-up	400 x 300	GSI in-kind, **vertical aperture > 300 mm sufficient, could be same type as for SFRS target area**
		1	2.9.6.2.2	vacuum chamber		GSI in-kind
		1	2.9.6.2.3.0	Mechanics others		GSI in-kind
		1	2.9.6.2.3.3	Other		GSI in-kind
	BPM	3	2.9.6.2.1.1	Pick-up	400 x 200 (TCR1 type 1)	GSI in-kind
		3	2.9.6.2.2	vacuum chamber		GSI in-kind
		3	2.9.6.2.3.0	Mechanics others		GSI in-kind
		3	2.9.6.2.3.3	Other		GSI in-kind
	SCR	2	2.9.6.3.2.1	Detector	450x300 (TCR1 type 1)	GSI in-kind
		2	2.9.6.3.2.2	vacuum chamber		GSI in-kind
		2	2.9.6.3.2.3.0	Mechanics		GSI in-kind
		2	2.9.6.3.2.3.2	Pneumatic Drive		GSI in-kind
HEBT	BPM	2	2.3.6.4.1.1.1.1	Pick-up	400x200 (TCR1 type 1)	FAIR, there is no separate PSP code for 400 mm HEBT BPMs and its sub-components!
		2	2.3.6.4.1.2.1	vacuum chamber		FAIR
		2	2.3.6.4.1.3.2	Mechanics		FAIR
	SCR	2	2.3.6.5.2.1	Detector	450x300 (TCR1 type 1)	FAIR, there is no separate PSP code for 400 mm HEBT SCRs and its sub-components!
		2	2.3.6.5.2.2	vacuum chamber		FAIR
		2	2.3.6.5.2.3.0	Mechanics incl. pneumatic drive		FAIR
pBar + HEBT	BPM	16	2.3.6.4.1.1.2.1 2.9.6.2.1.2	High-impedance pre-amplifier		Use same electronics chain as in TCR1 High-imp. pre-amp. and Hadron Pre-Amplifier HPA110