

FAIR Multiplet Fiducialisation at CERN

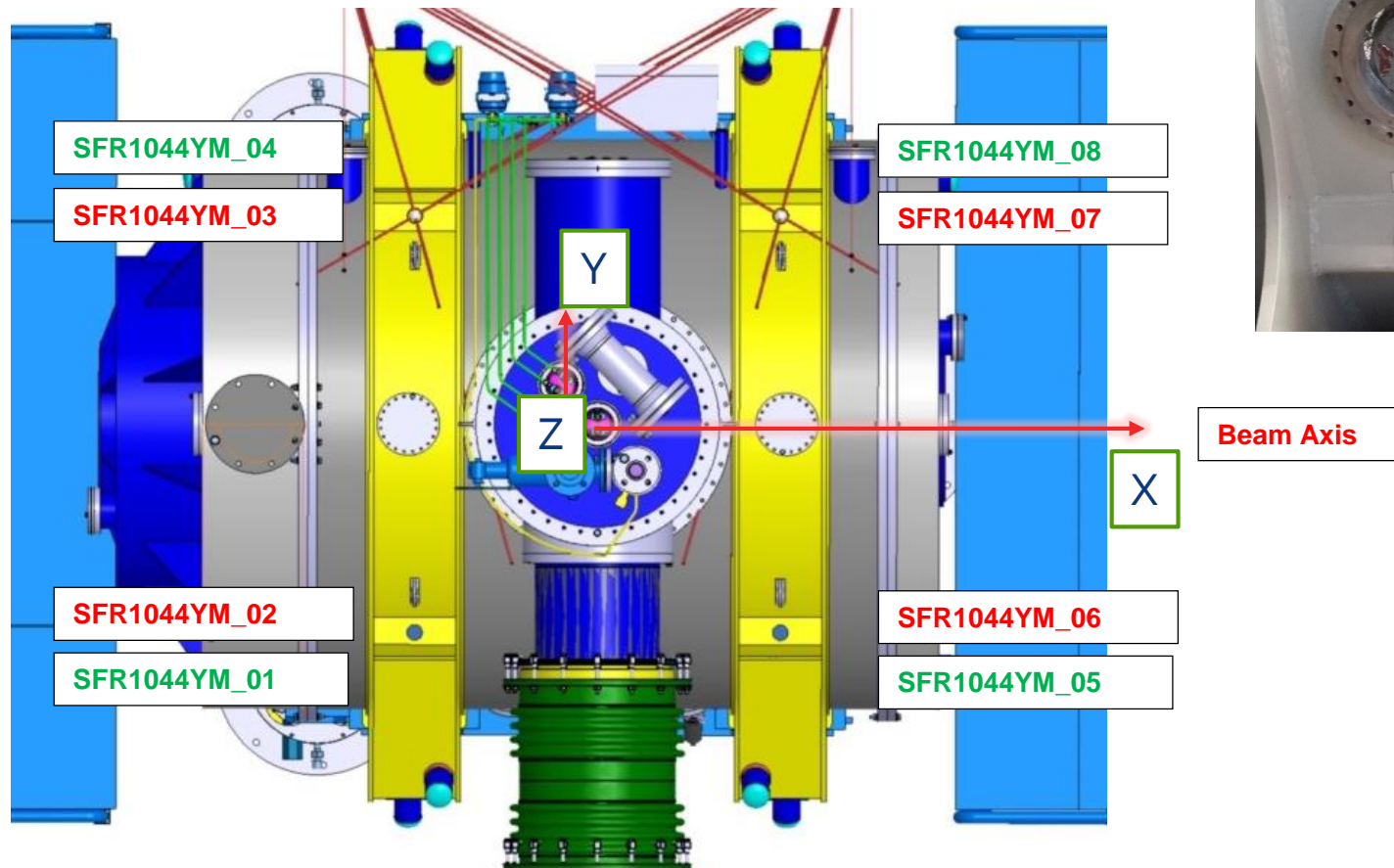
Transfer measurements



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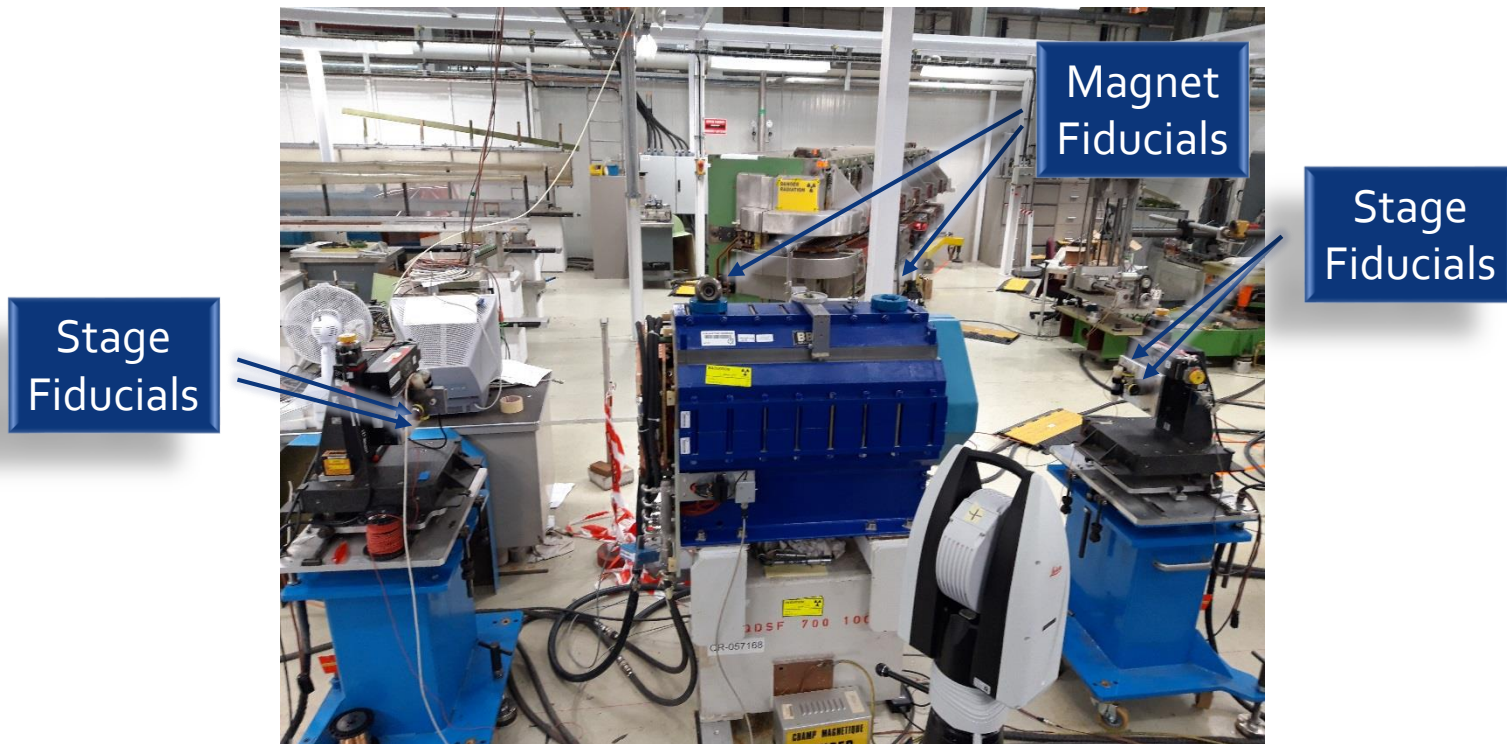
Fiducialisation

- Transfer of the magnetic and / or geometrical axis of the magnet to the external fiducials on the vacuum vessel.



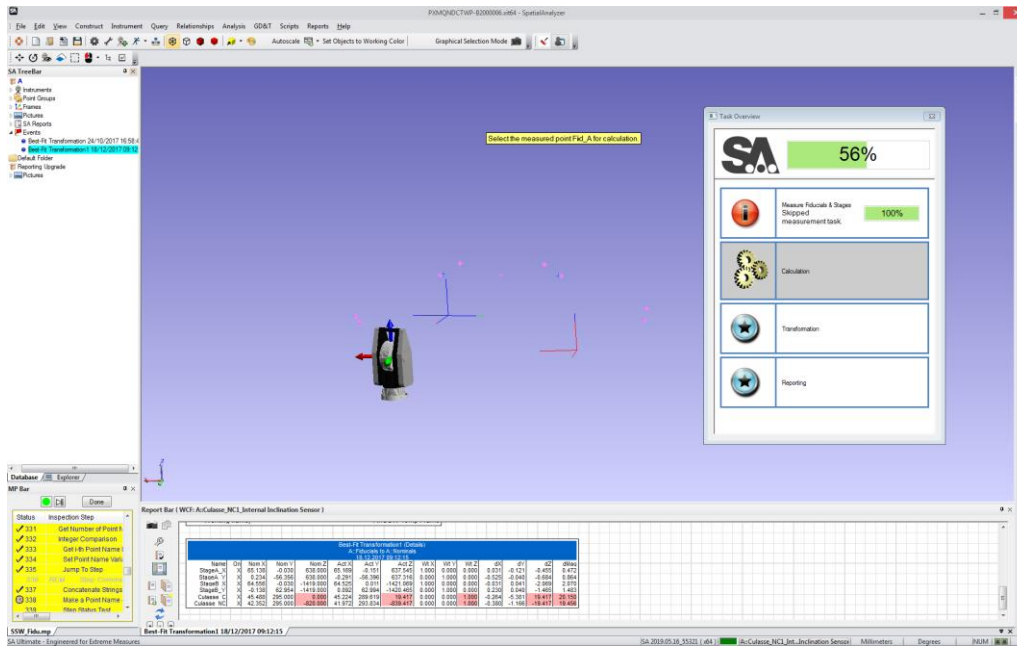
Transfer measurement

- The magnetic axis is measured by a SSW system (see Giancarlo`s talk)
- Compensated by Sagitta & Field direction
- Transferred using a LEICA AT 402 or AT930 Laser Tracker to the fiducials



Transfer measurement

- NRK Spatial Analyzer is used for acquisition & calculation
- Use of SA measurement plans as automatic scripts for coherent measurements & reports
- The report template will be adapted to GSI needs



Point Group A: Fiducials			
Point Name	X (mm)	Y (mm)	Z (mm)
Culasse_C	45.224	-19.417	289.619
Culasse_Center	43.598	410.000	291.726
Culasse_NC	41.972	839.417	293.834
Fid_C	-0.282	109.631	360.332
Fid_NC	-0.363	711.018	360.167
StageA_X	65.169	-637.545	-0.151
StageA_Y	-0.291	-637.316	-56.396
StageB_X	64.525	1421.069	0.011
StageB_Y	0.092	1420.465	62.994

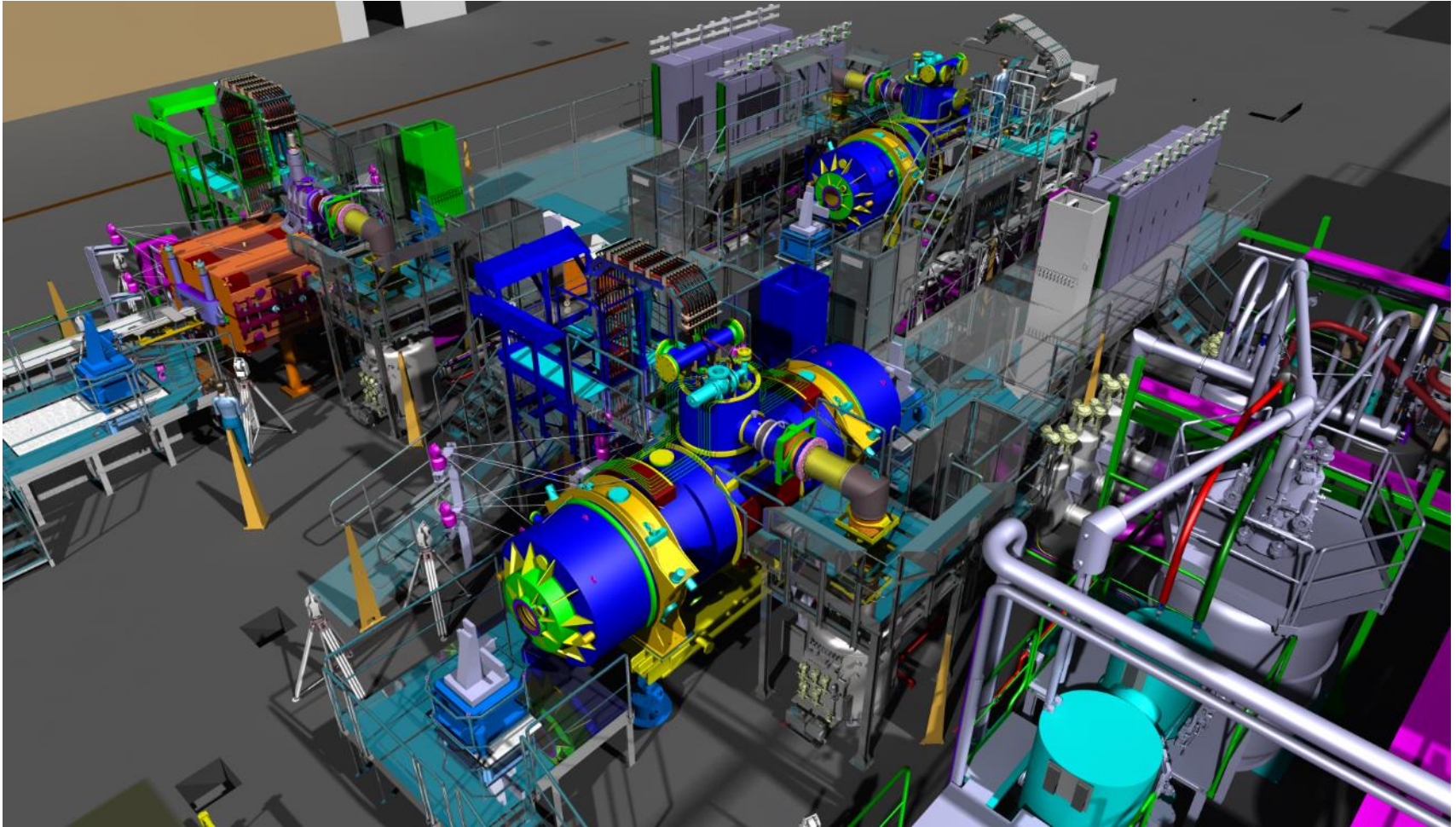
Best-Fit Transformation1 (Details)														
A: Fiducials to A: Nonius														
18.12.2017 09:12:15														
Name	On	Nom X	Nom Y	Nom Z	Act X	Act Y	Act Z	Wt X	Wt Y	Wt Z	dx	dy	dZ	dMag
StageA_X	X	65.138	-0.030	638.000	65.169	-0.151	637.545	1.000	0.000	0.000	0.031	-0.121	-0.455	0.472
StageA_Y	X	0.234	-56.356	638.000	-0.291	-56.396	637.316	0.000	1.000	0.000	-0.525	-0.040	-0.684	0.864
StageB_X	X	64.556	-0.030	-1419.000	64.525	0.011	-1421.069	1.000	0.000	0.000	-0.031	0.041	-2.069	2.070
StageB_Y	X	-0.138	62.954	-1419.000	0.092	62.994	-1420.465	0.000	1.000	0.000	0.230	0.040	-1.465	1.483
Culasse_C	X	45.488	295.000	0.000	45.224	289.619	19.417	0.000	0.000	1.000	-0.264	-5.381	19.417	20.150
Culasse_NC	X	42.352	295.000	-820.000	41.972	293.834	-839.417	0.000	0.000	1.000	-0.380	-1.166	-19.417	19.456

Transfer measurement

- 3 different benches
- The challenge are the lines of sight on the different benches and for the different types of multiplerts



Measurement Layout



Courtesy of A. Kosmicki A. Tursun

Measurement Layout

- First short Multiplet is on the blue bench
 - Network pillars are ready to be installed
 - Due to too many obstacles, the Instrument & Network positions are determined during the first measurement
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- 4 Instrument stations around the magnet
 - 12 Network points
 - 8 Fiducials on the Multiplet
 - 4 Fiducials on the SSW stages

Next steps

- Network setup as soon as the SSW stages are in place
- First manual measurement in 1 month time
- Followed by development of the automatisisation script

- Meeting with GSI colleagues in week 29 or 30
 - Measurement details to be defined
 - Report template to be defined and agreed on with GSI colleagues
 - File formats and versions do be agreed on
 - Datatransfer & documentation to be defined



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