PAUL SCHERRER INSTITUT

PSI

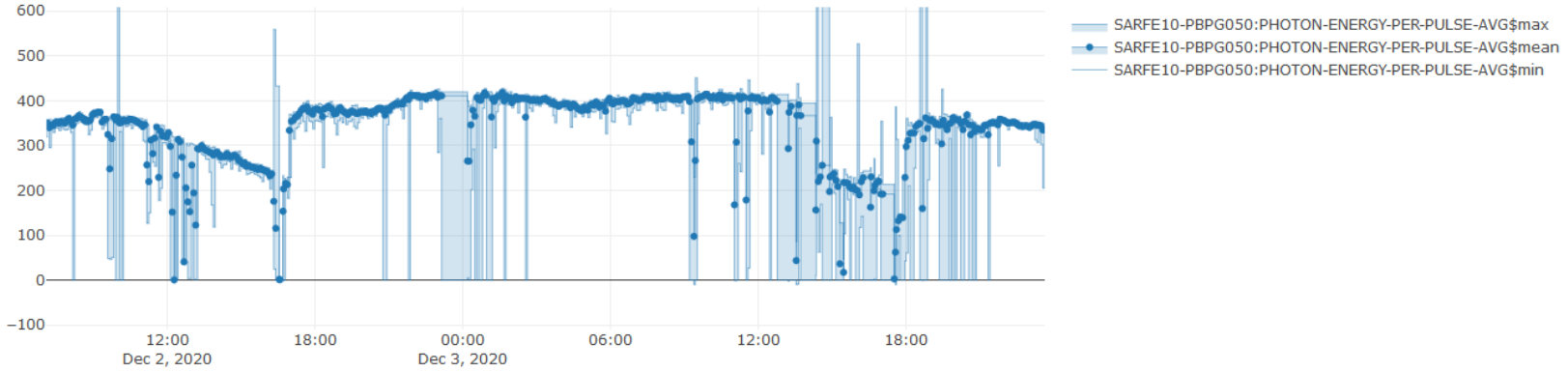
Alvra Commissioning beamtime

December 2nd & 3rd, 2020

Schedule KW41

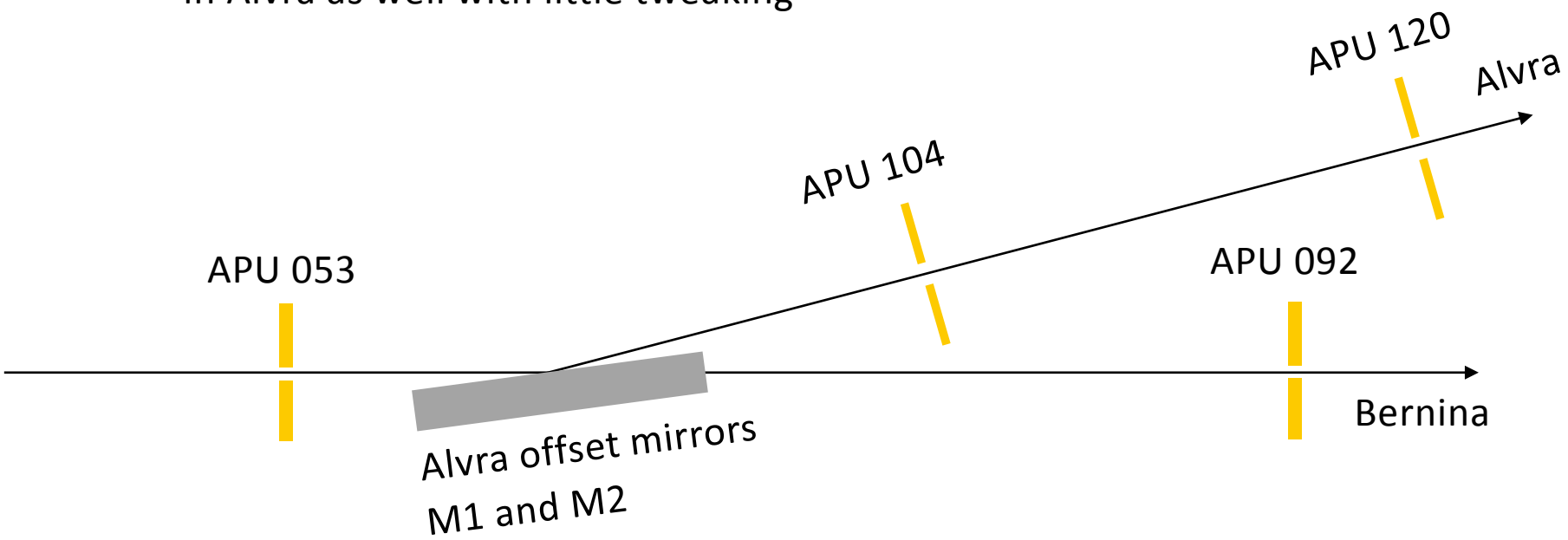
	Dec				Comm.
49	Tue 1	MS	MS	MS	
	Wed 2	AC	AC	AC	MW
	Thu 3	AC	AC	AC	MW
	Fri 4	BC	BC	BC	MW
	Sat 5	BC	BC	BC	MW
	Sun 6	BC	BC	BC	MW

- 8 keV photon energy
- Photon energy changes (~100 eV)
- Narrow bandwidth



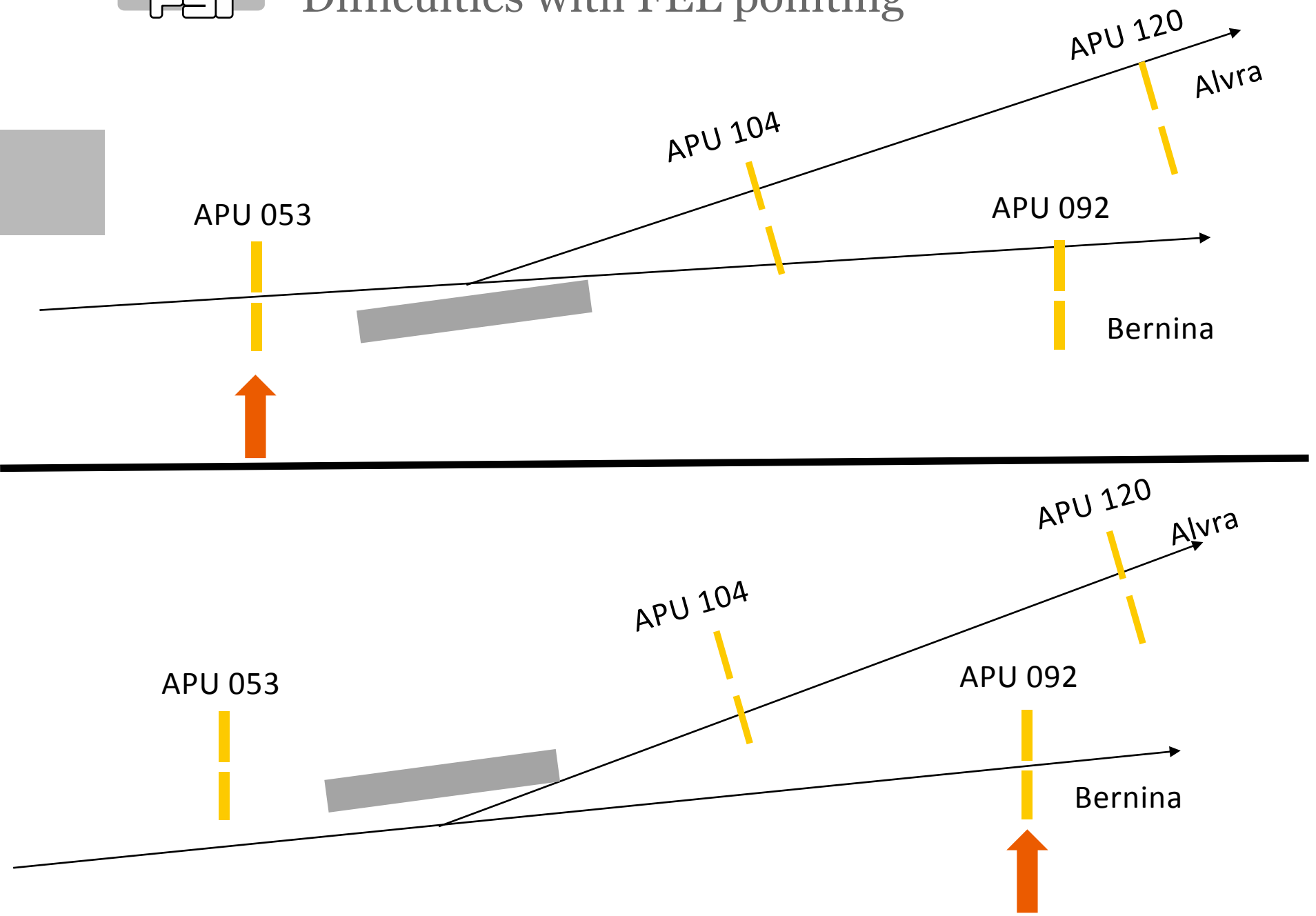
Difficulties with FEL pointing

- Lot of difficulties to align the FEL beam through the beamline
- We used to have the beam from machine well align along the “photonics” trajectory across 2 slits in the Bernina branch
- From there the insertion of the Alvra offset mirrors would bring the FEL aligned in Alvra as well with little tweaking

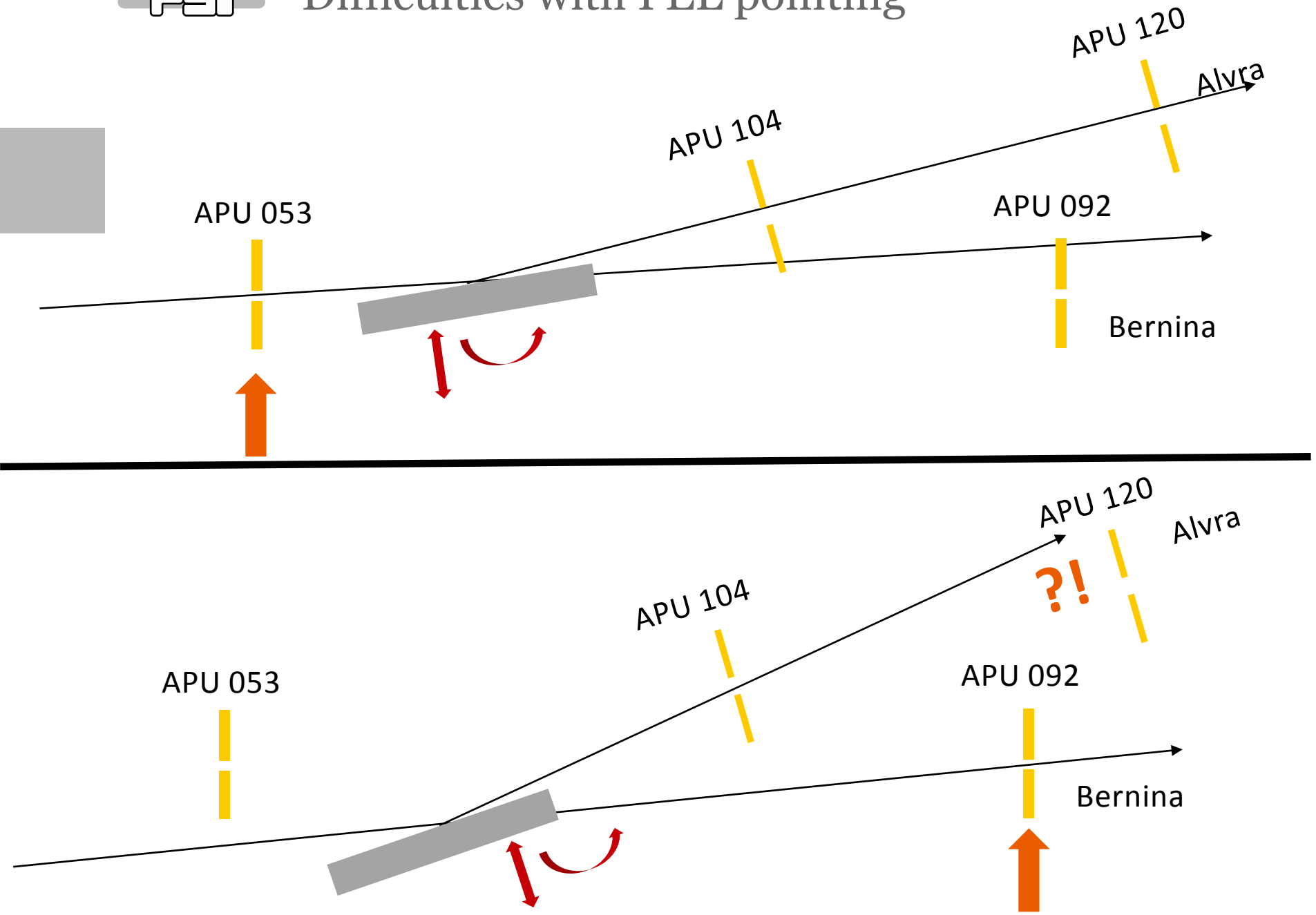


- This is no longer the case as checked with Florian and Simona on Wednesday

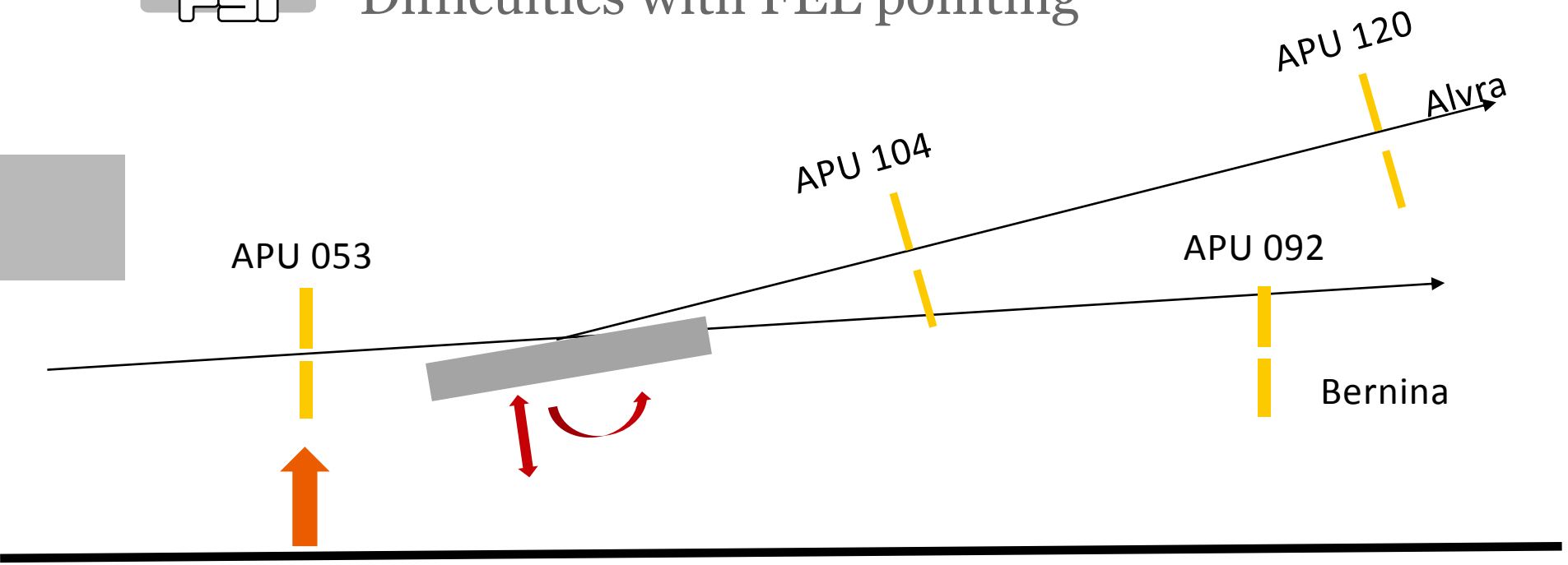
Difficulties with FEL pointing



Difficulties with FEL pointing

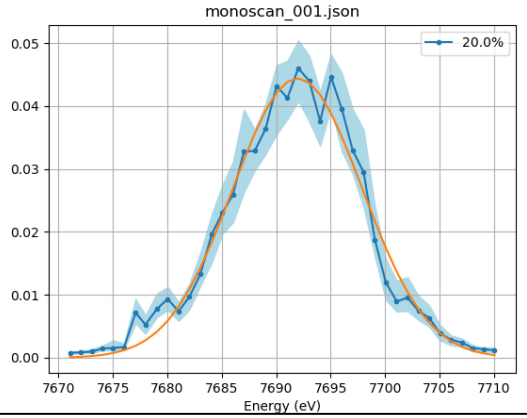


Difficulties with FEL pointing



- Trajectory can be recovered with a lot of effort acting on M1 and M2.
- We have the impression that it is getting worse any time we receive beam

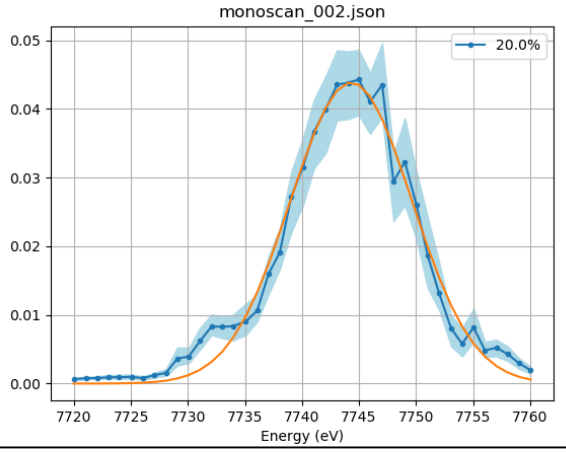
Measured FEL spectrum



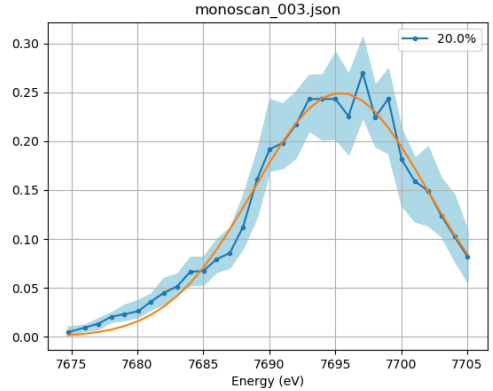
Wed Dec 2nd at 17:00

```
Position t0 = 7691.968 eV
Width = 13.975 eV
Bandwidth = 0.18168302312230108 %
```

Wed Dec 2nd at 17:30




```
Position t0 = 7744.315 eV
Width = 12.579 eV
Bandwidth = 0.1624288268232891 %
```



Thu Dec 3rd at 8:30

```
Position t0 = 7695.396 eV
Width = 15.414 eV
Bandwidth = 0.20030158292048908 %
```