

PAUL SCHERRER INSTITUT



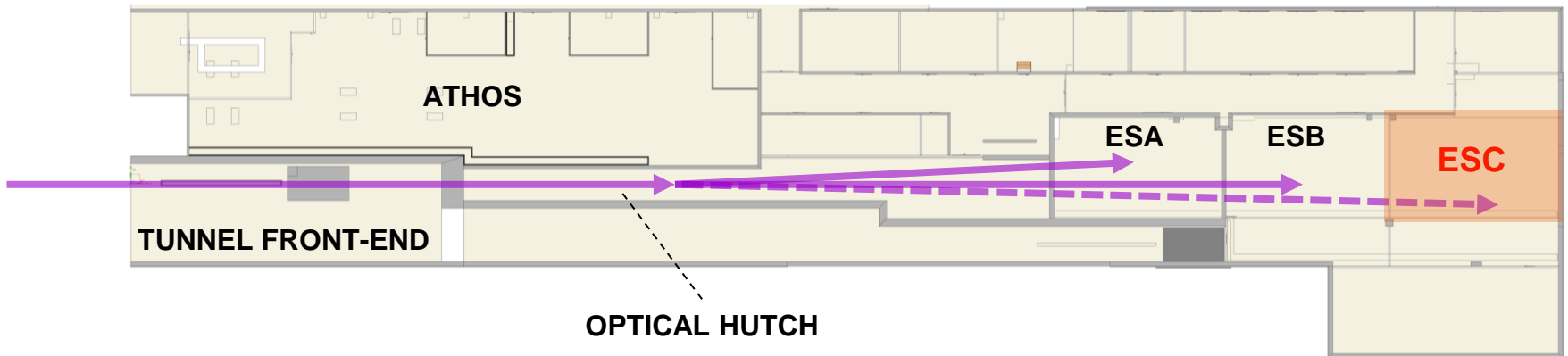
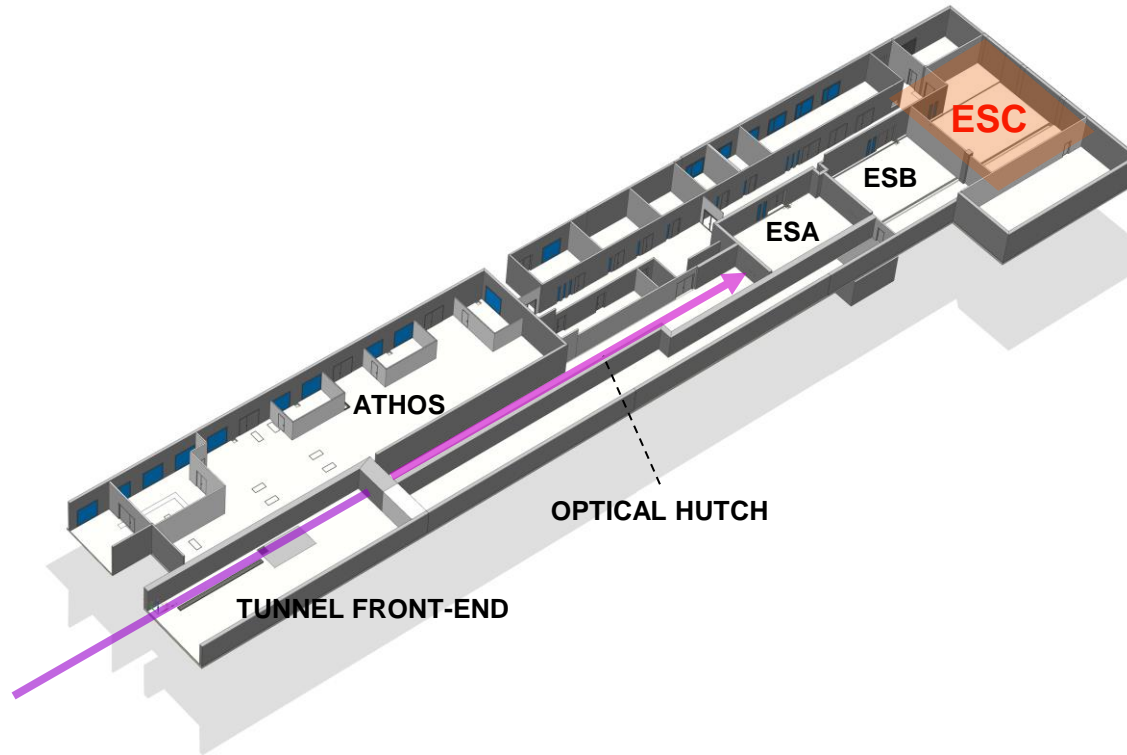
Bill Pedrini :: SwissFEL :: Paul Scherrer Institut

Experimental station C

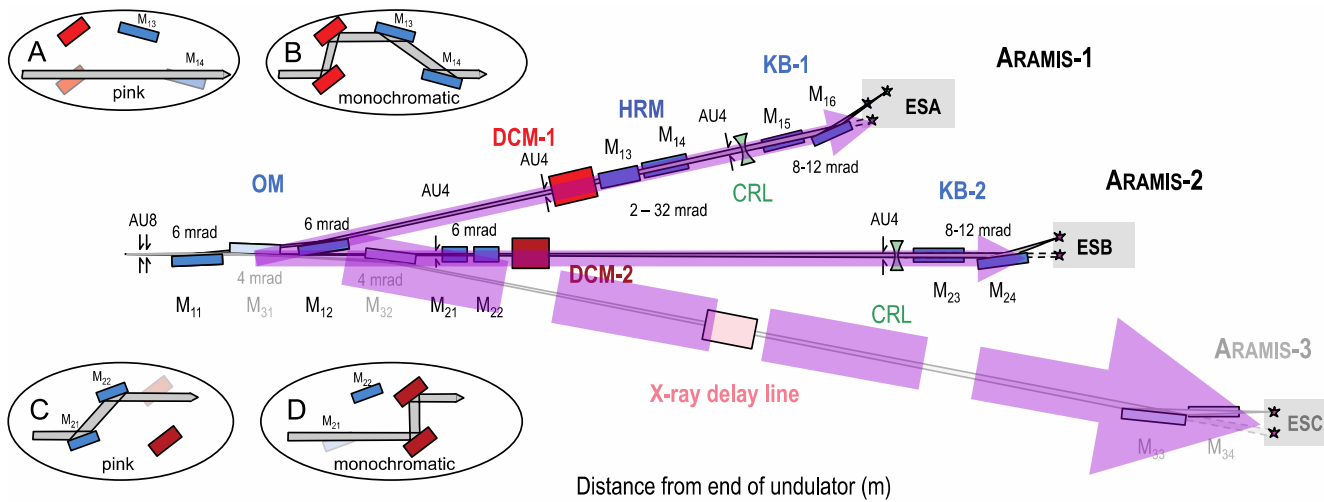
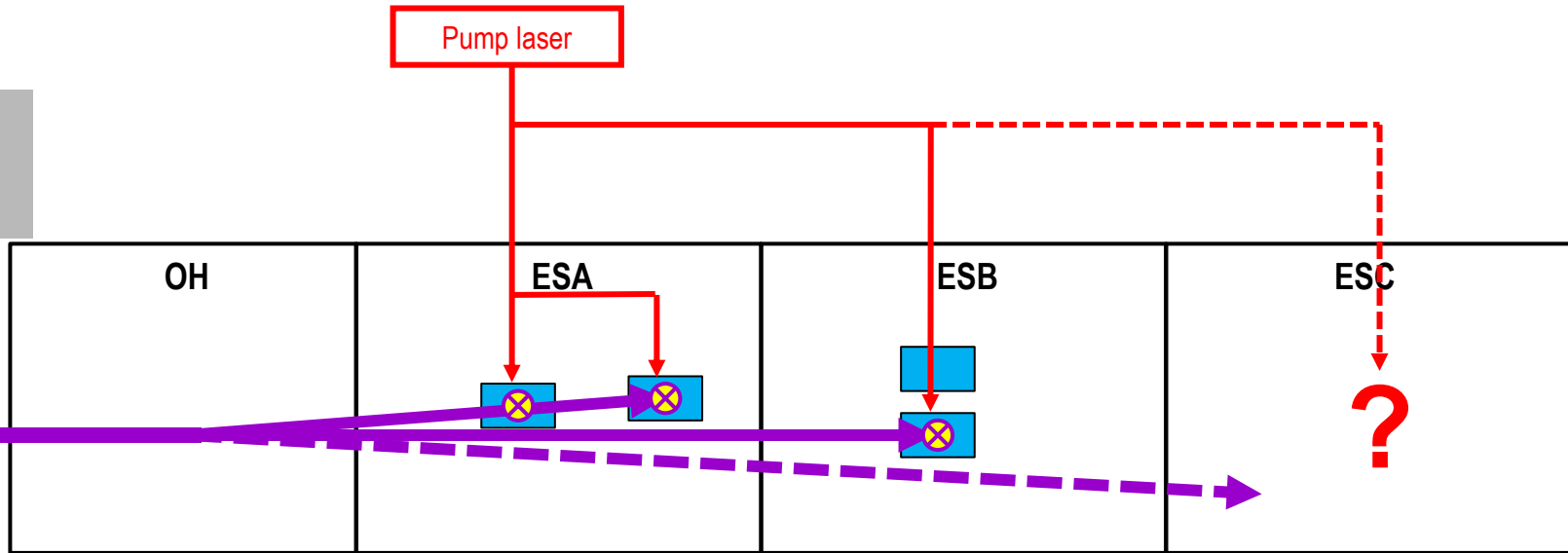
Plans for the upcoming future

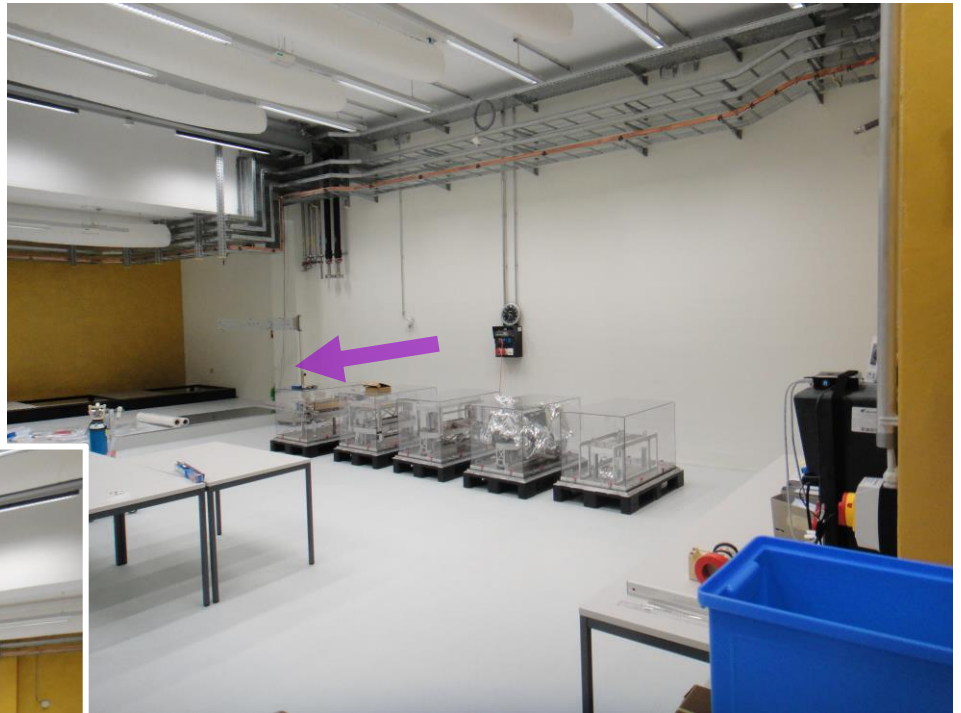
SwissFEL User Kick-off Meeting, 06.12.2016

ARAMIS experimental area

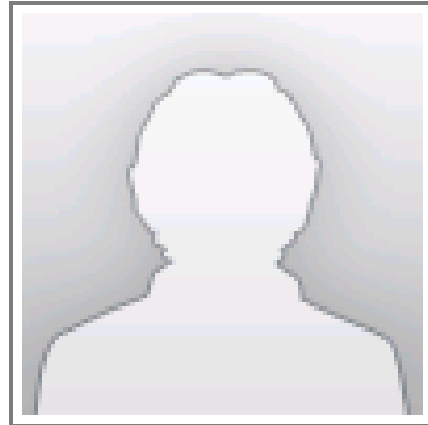


ARAMIS Experimental stations





ESC staff webpage



Pedrini Bill Francesco (PSI)

Objectives of the ESC project (current status)

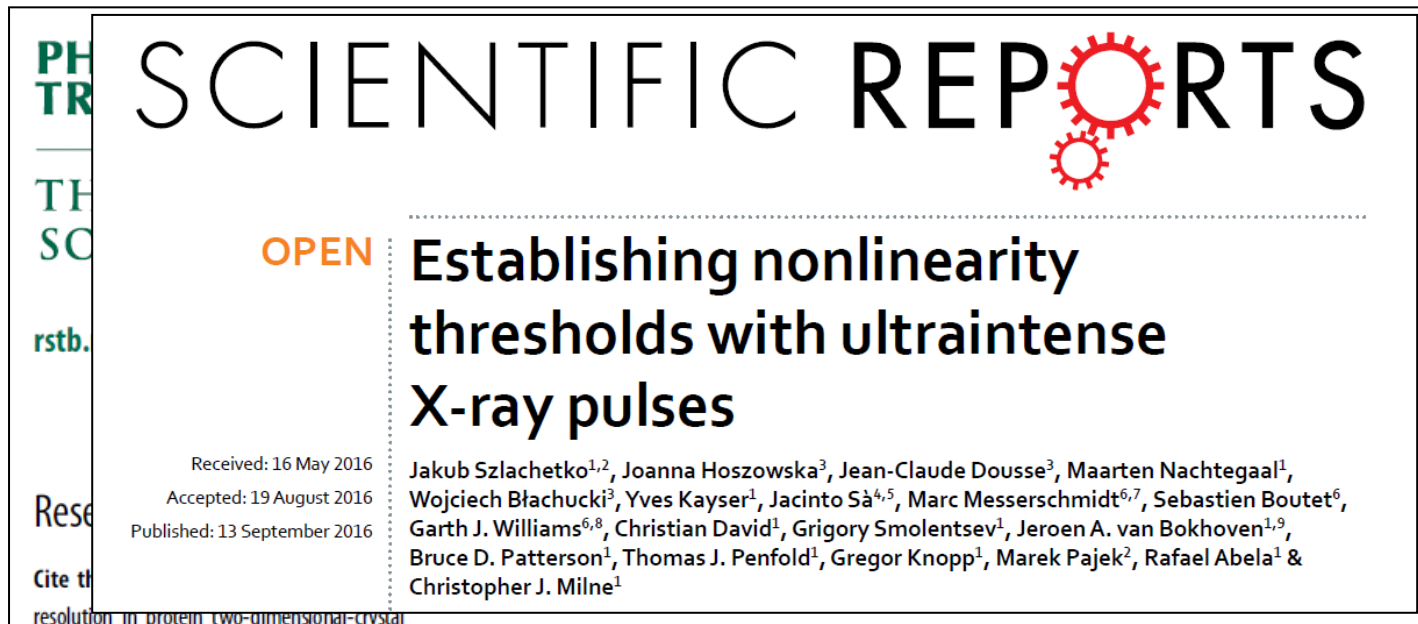
Realize ARAMIS experimental station with:

1. **Nanofocus** instrument with 100 – 200 nm beam size
 2. Semi-permanent instrument for **protein crystallography**
 3. **Custom** user setups (X-ray beam properties / sample environment) are possible
- Pump-probe measurements with ESC optical laser possible at all instruments

Realize ARAMIS experimental station with:

1. **Nanofocus** instrument with 100 – 200 nm beam size

- Complementary to ESA and ESB
- In line with scientific activities at PSI



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resolution in protein two-dimensional-crystal

SCIENTIFIC REPORTS

OPEN Establishing nonlinearity thresholds with ultraintense X-ray pulses

Received: 16 May 2016
Accepted: 19 August 2016
Published: 13 September 2016

Jakub Szlachetko^{1,2}, Joanna Hozowska³, Jean-Claude Dousse³, Maarten Nachtegaal¹, Wojciech Błachucki³, Yves Kayser¹, Jacinto Sà^{4,5}, Marc Messerschmidt^{6,7}, Sebastien Boutet⁶, Garth J. Williams^{6,8}, Christian David¹, Grigory Smolentsev¹, Jeroen A. van Bokhoven^{1,9}, Bruce D. Patterson¹, Thomas J. Penfold¹, Gregor Knopp¹, Marek Pajek², Rafael Abela¹ & Christopher J. Milne¹

SCIENTIFIC REPORTS

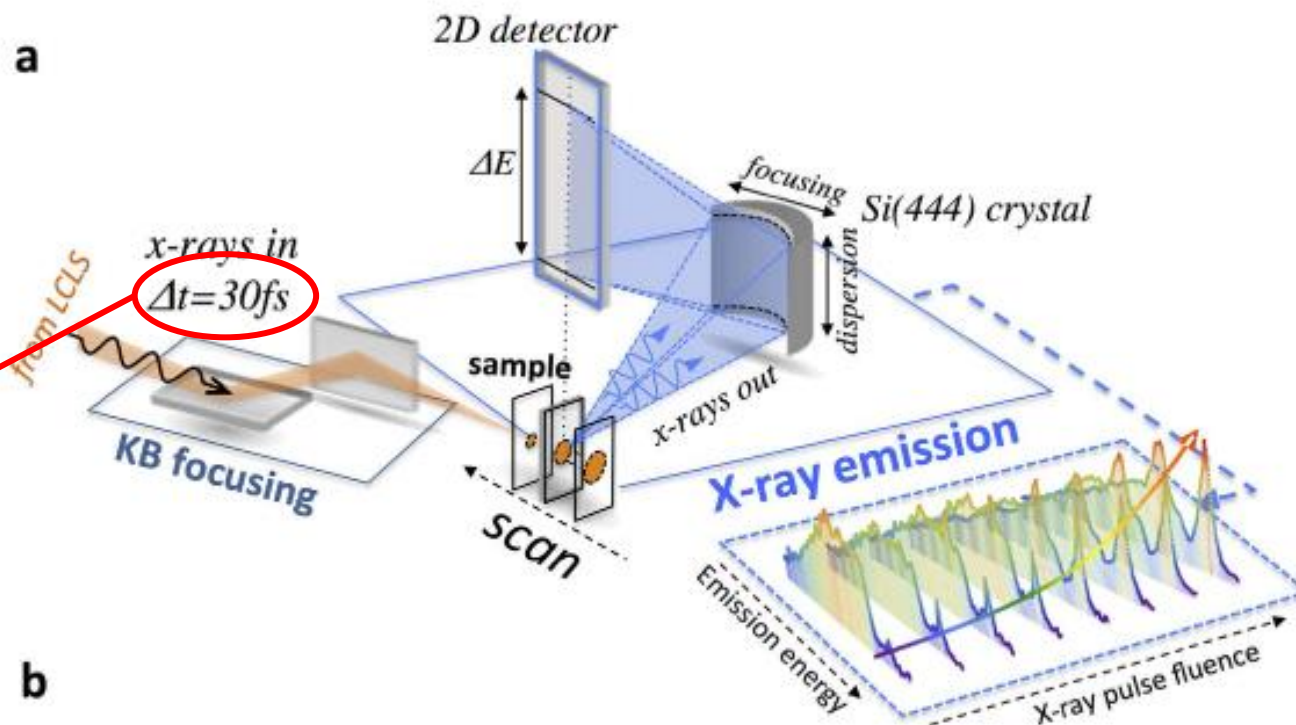
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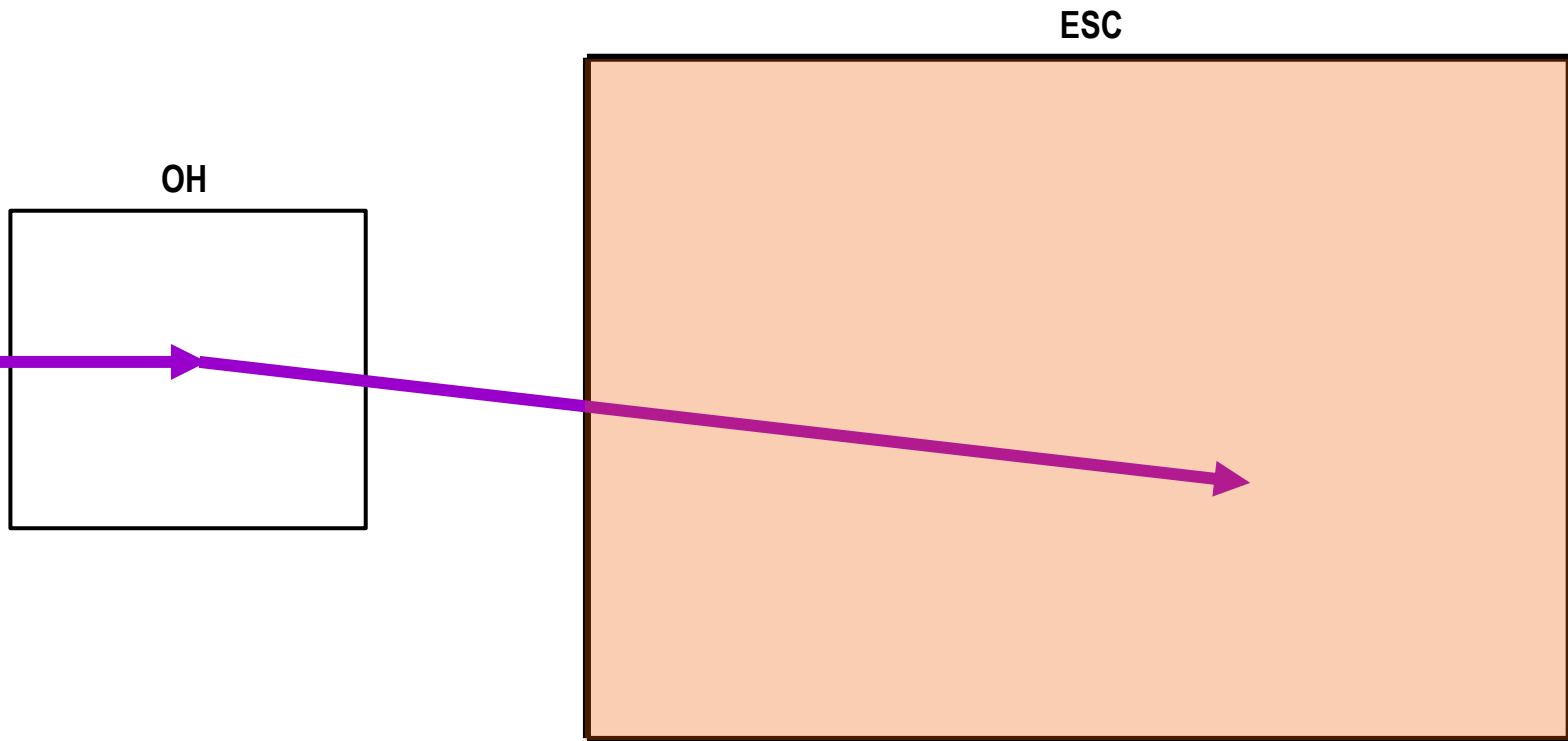
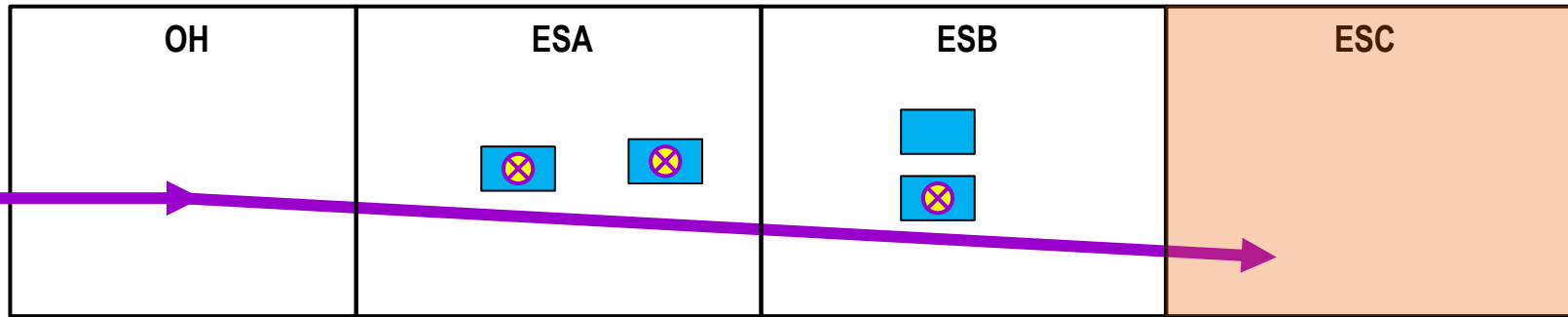
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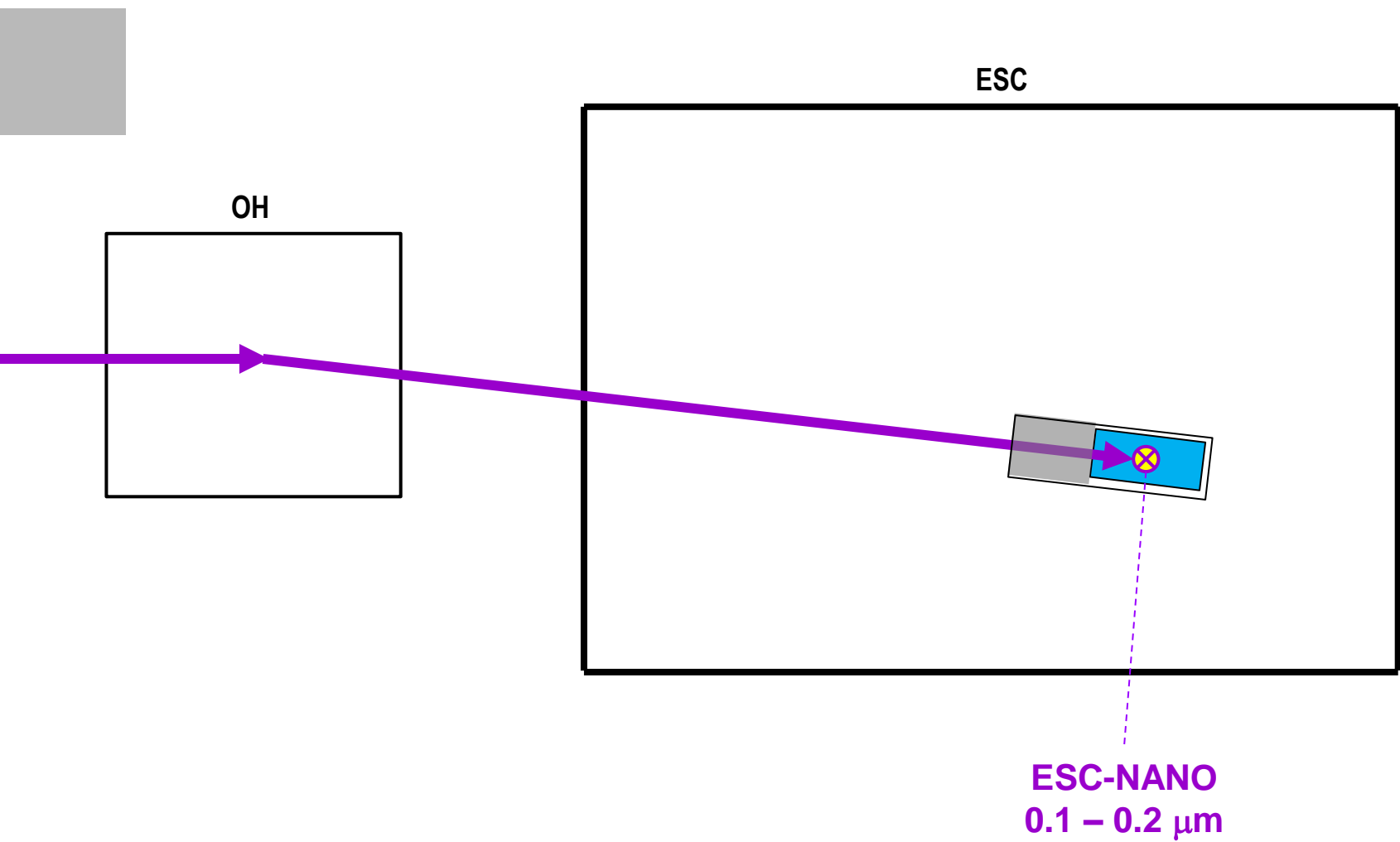
Jakub Szlachetko^{1,2}, Joanna Hozzowska³, Jean-Claude Dousse³, Maarten Nachtegaal¹, Wojciech Błachucki³, Yves Kayser¹, Jacinto Sà^{4,5}, Marc Messerschmidt^{6,7}, Sebastien Boutet⁶, Garth J. Williams^{6,8}, Christian David¹, Grigory Smolentsev¹, Jeroen A. van Bokhoven^{1,9}, Bruce D. Patterson¹, Thomas J. Penfold¹, Gregor Knopp¹, Marek Pajek², Rafael Abela¹ & Christopher J. Milne¹



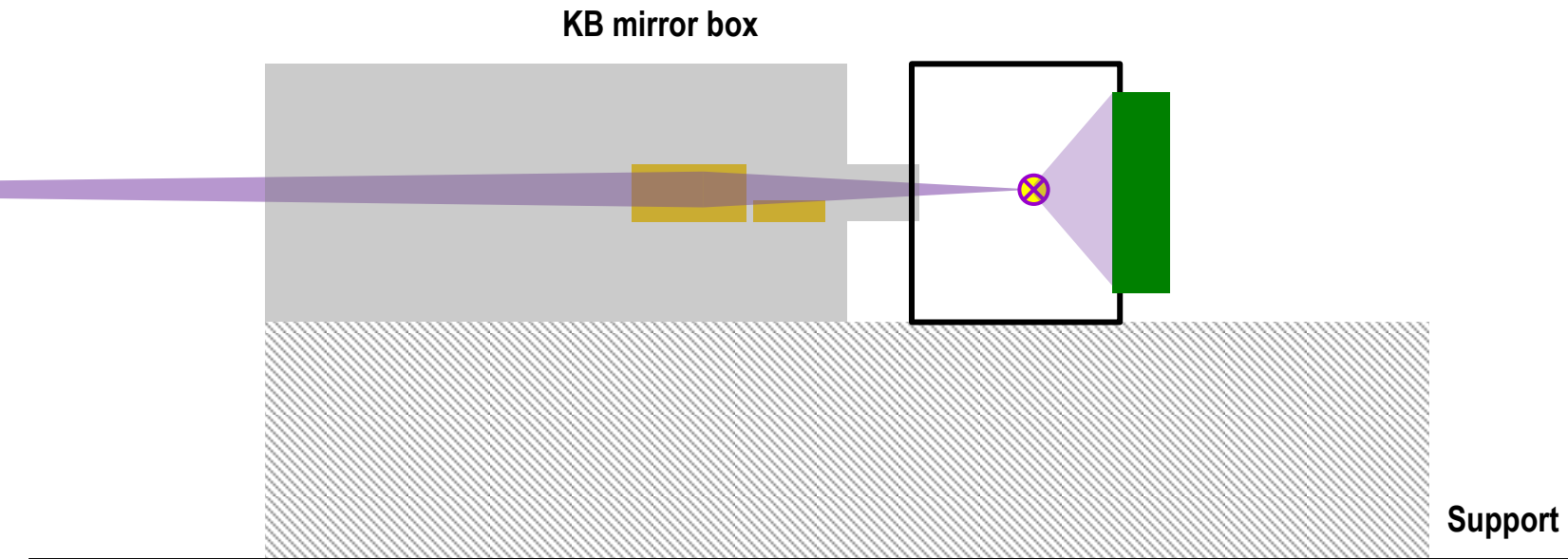
SwissFEL
attosecond mode

< 0.5 fs pulses



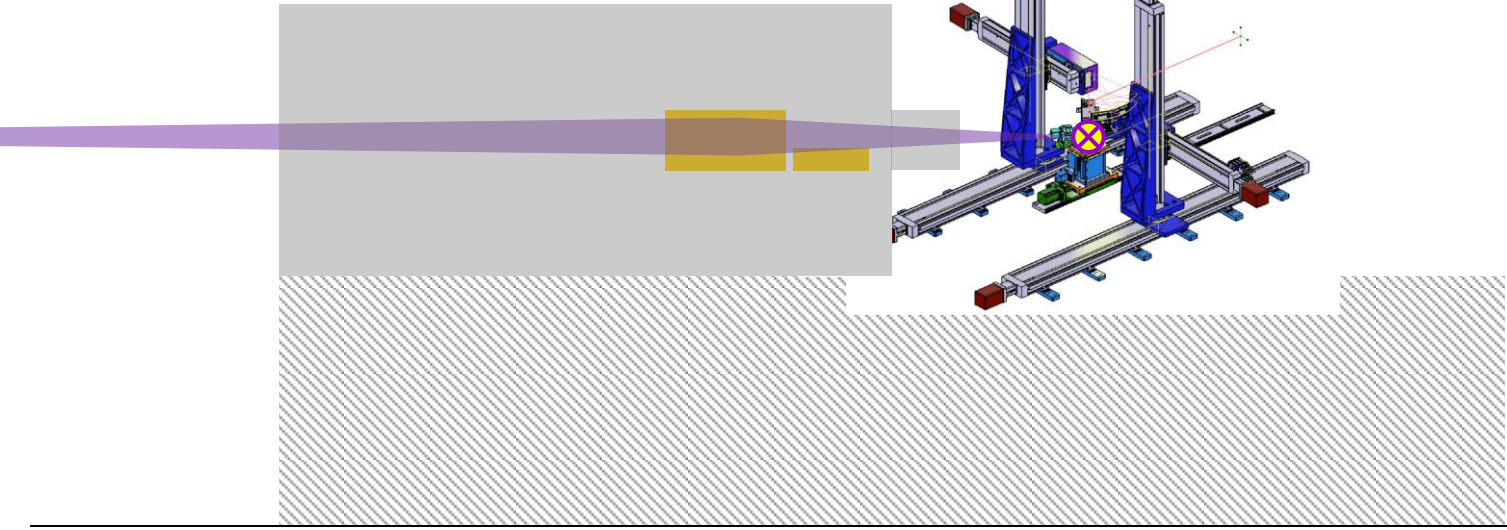


ESC-NANO layout

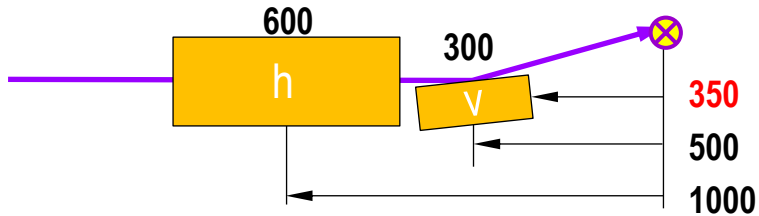




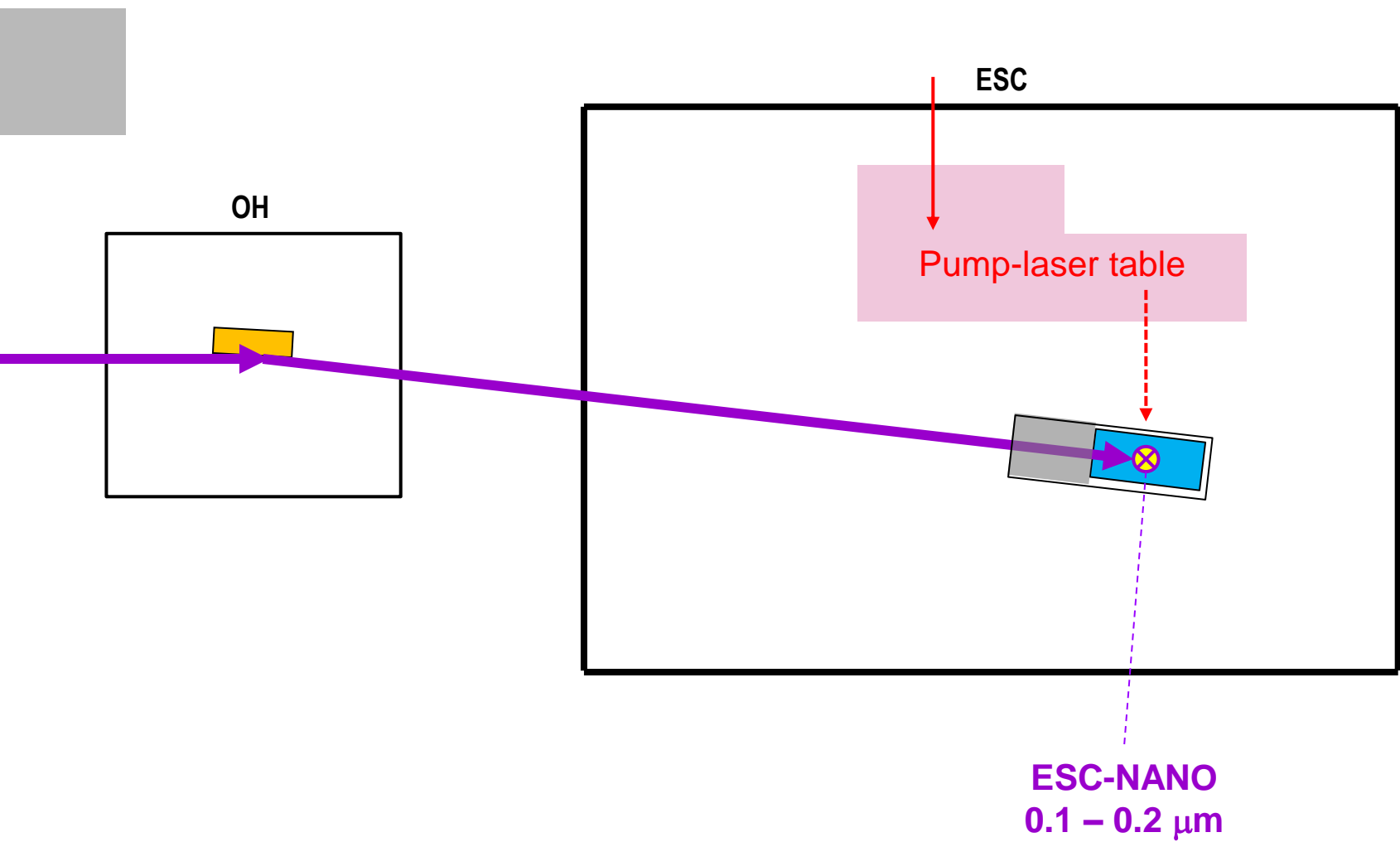
KB mirror box

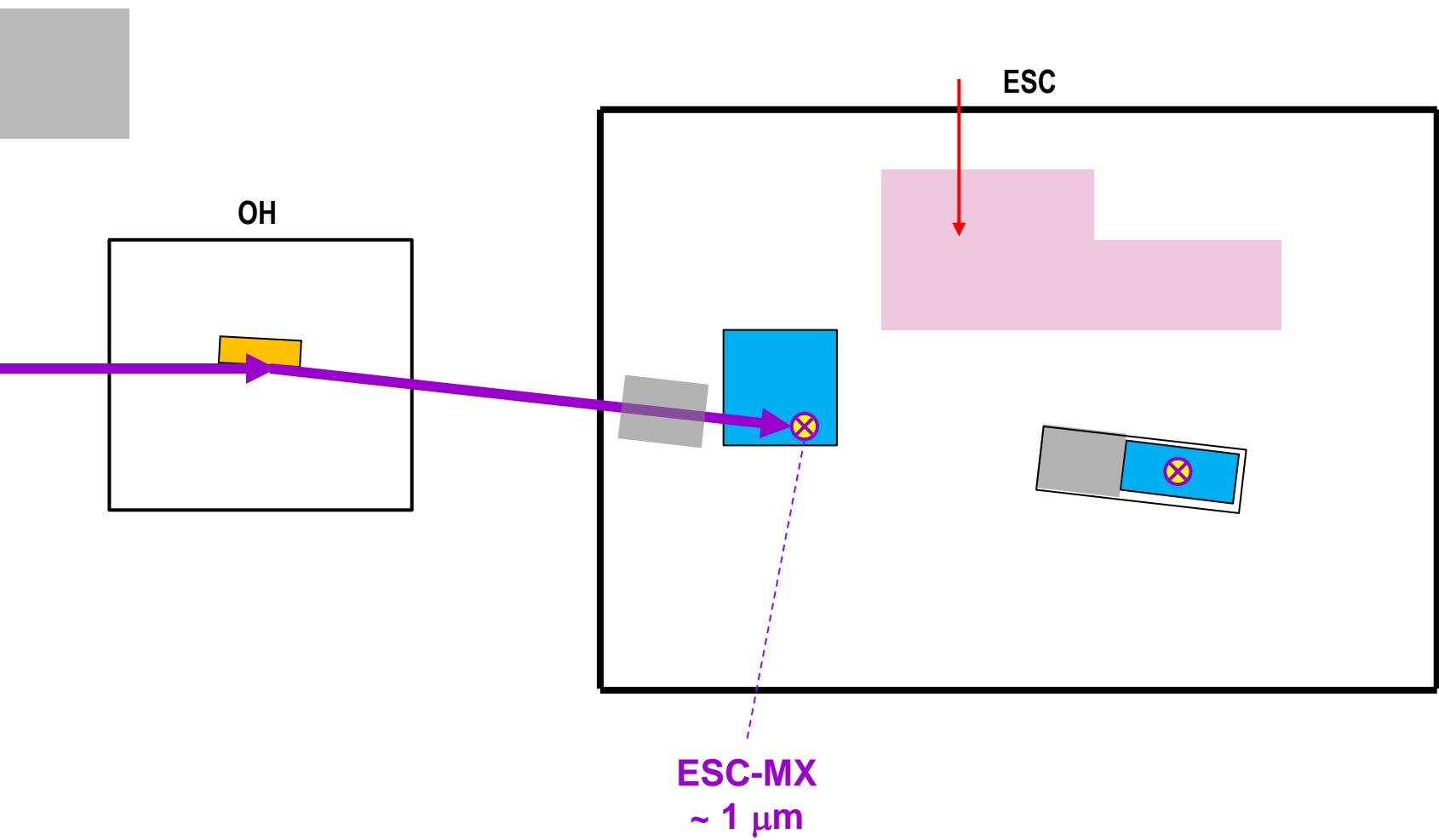


Support

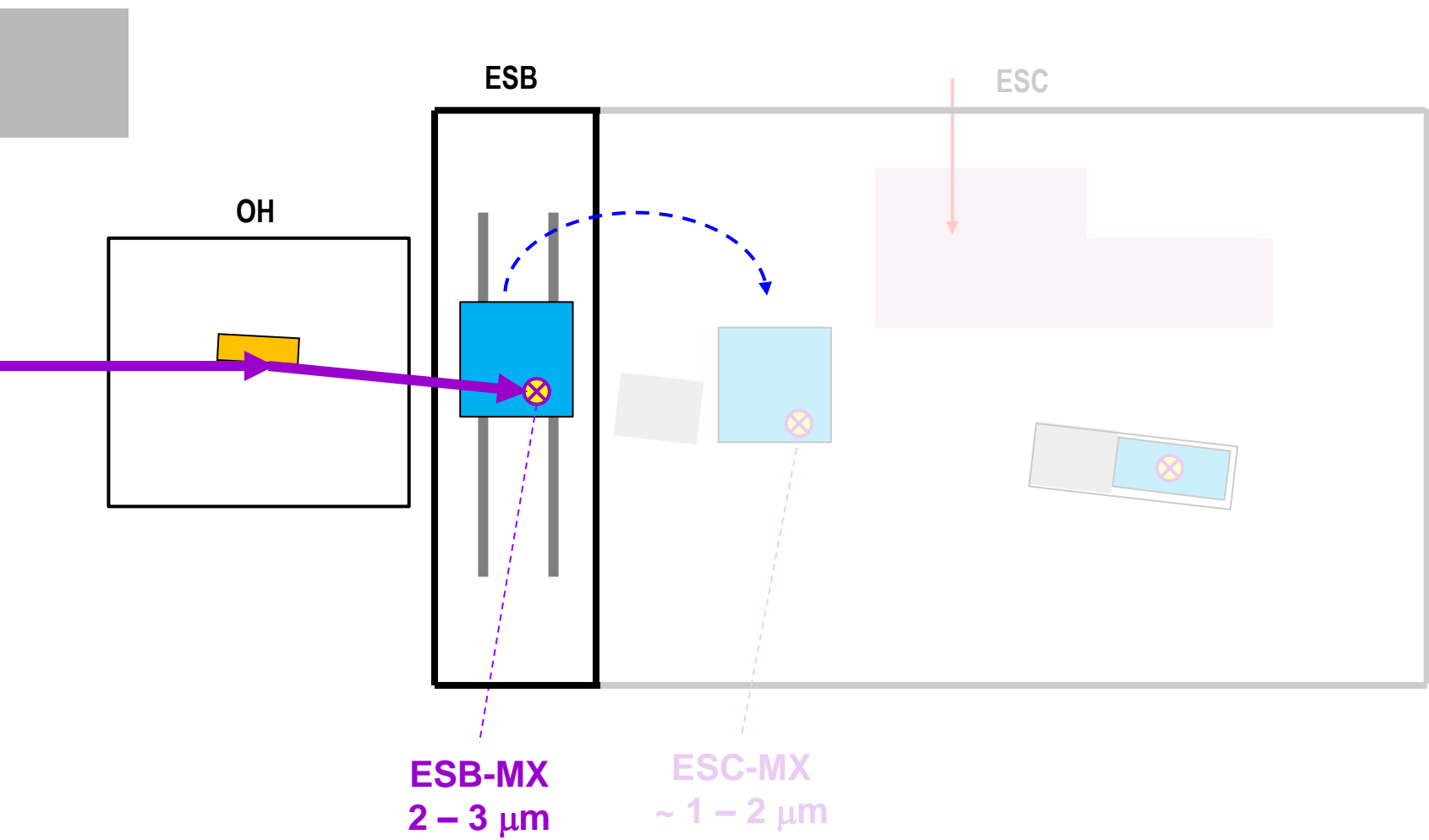


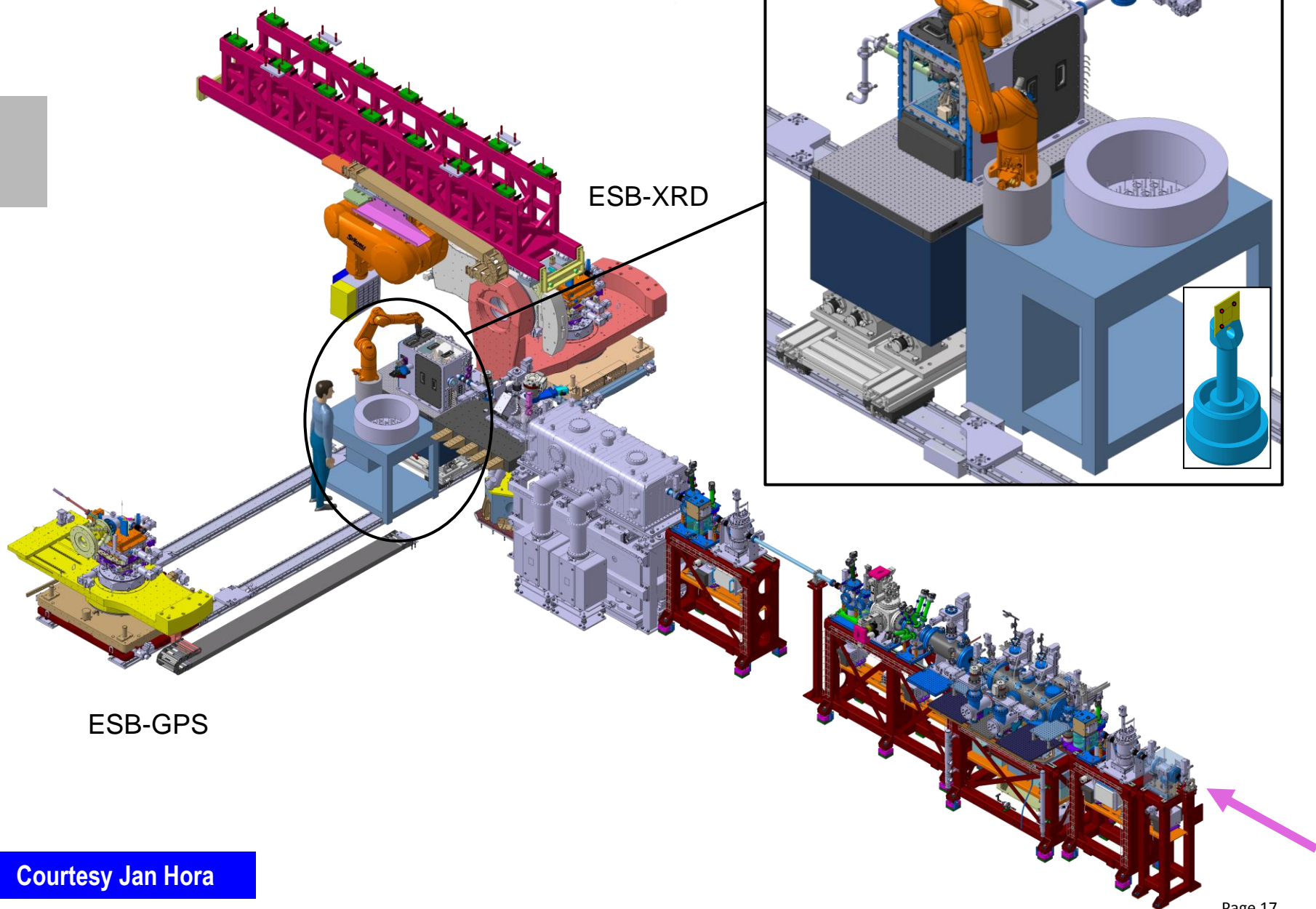
E (keV)	Horizontal (nm)	Vertical (nm)	T
12.4	100	140	0.8
8.9	120	160	0.8
5.3	140	180	0.8
3.5	160	200	0.6



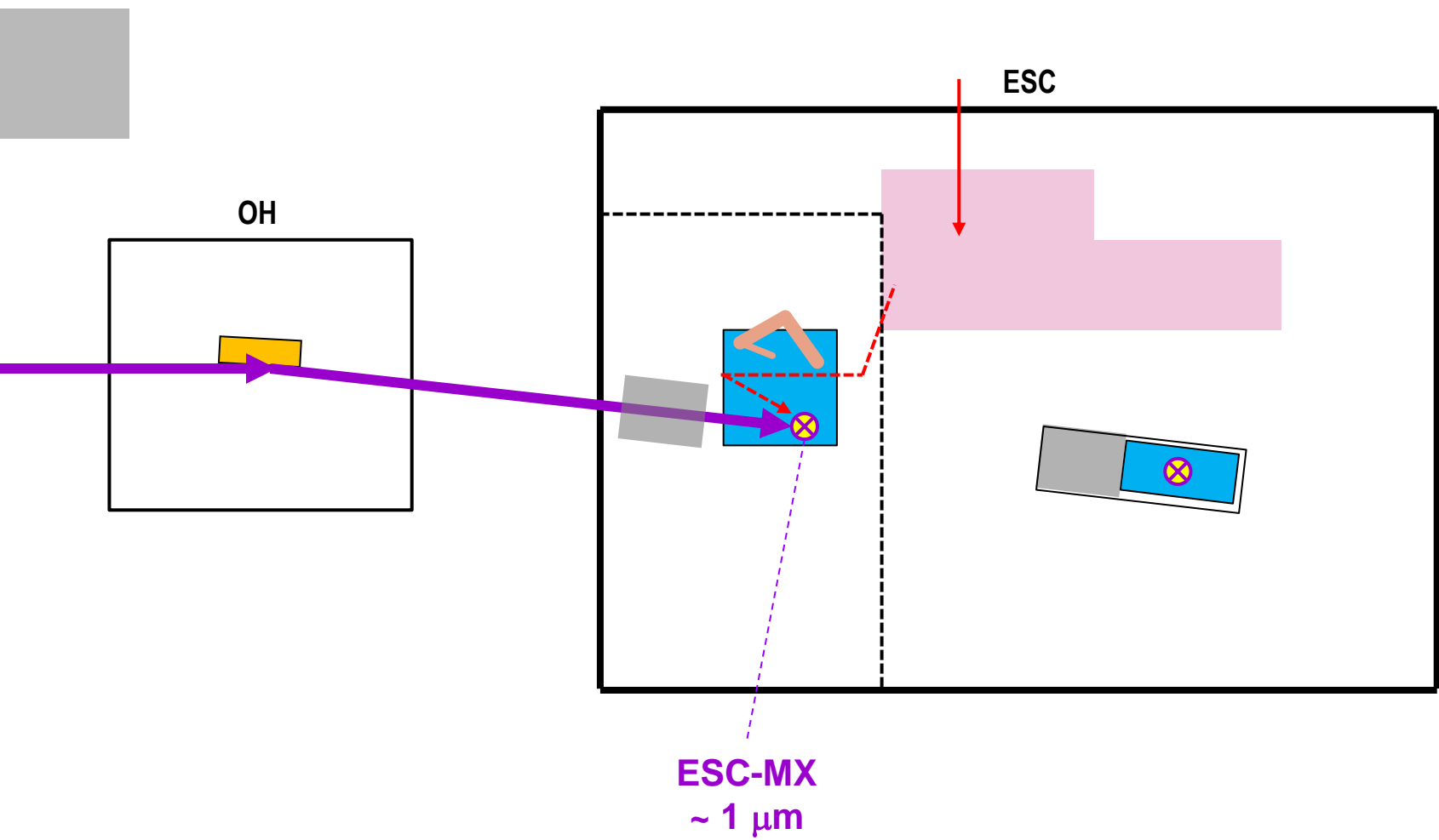


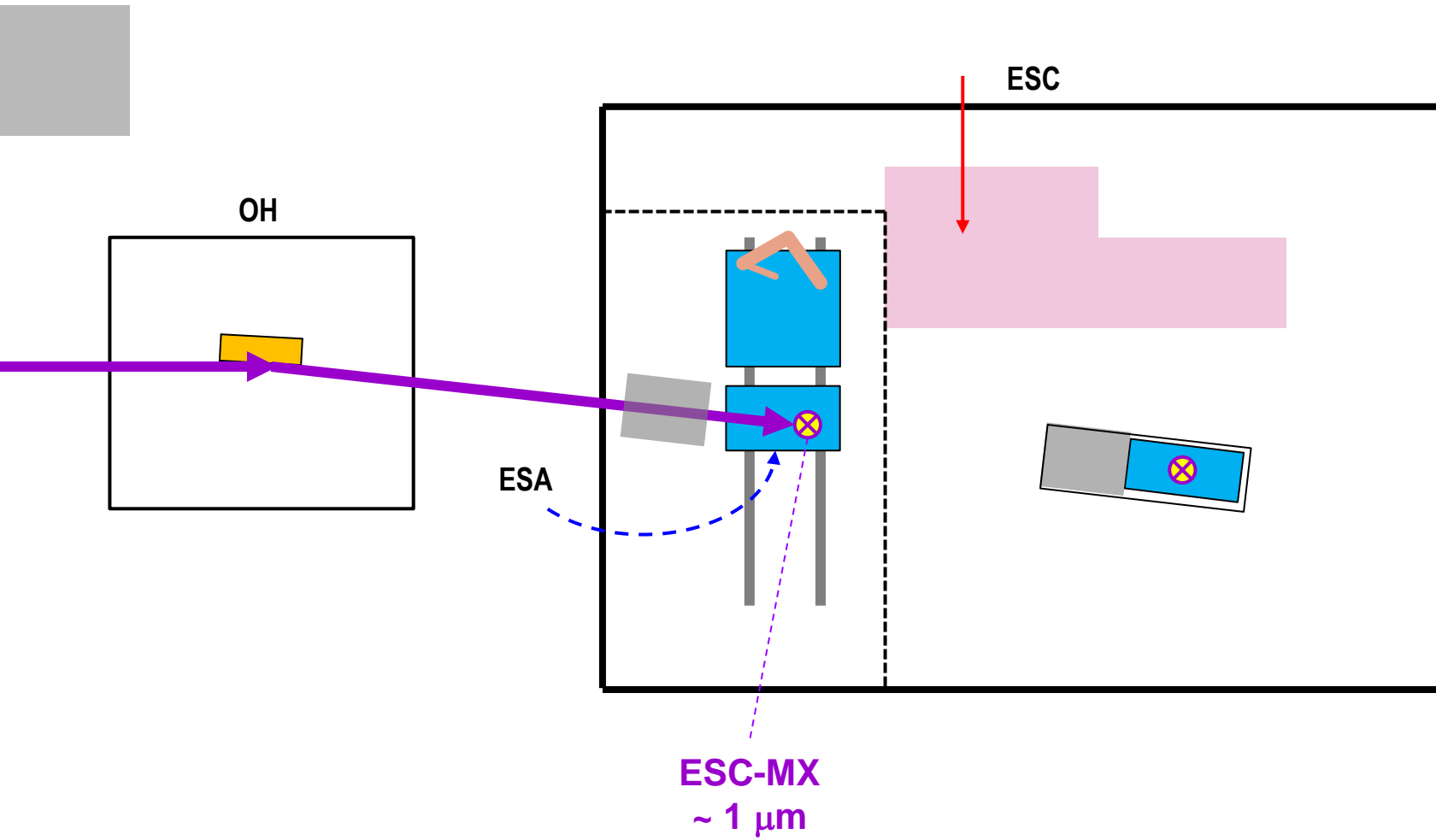
ESC-MX (ESB-MX)

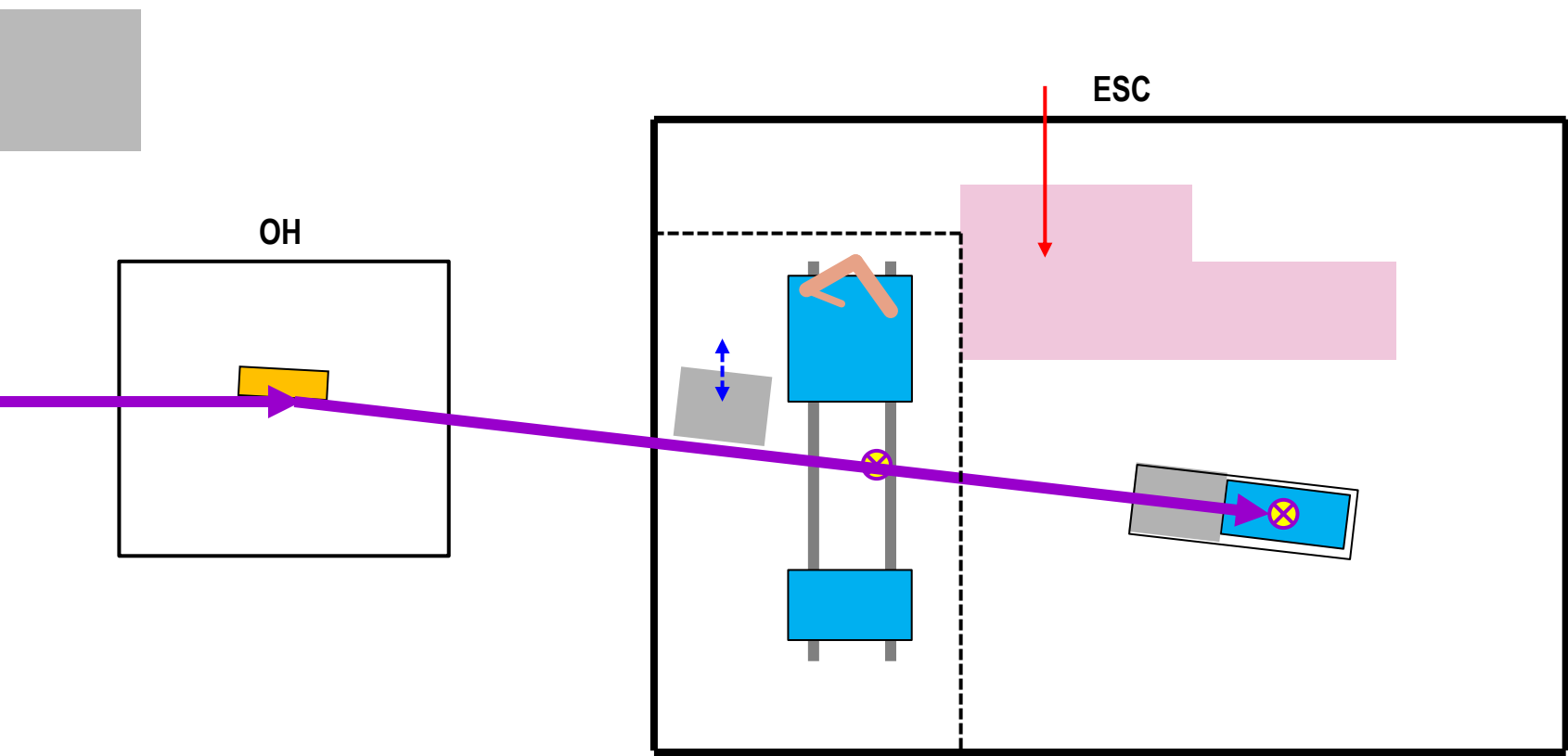


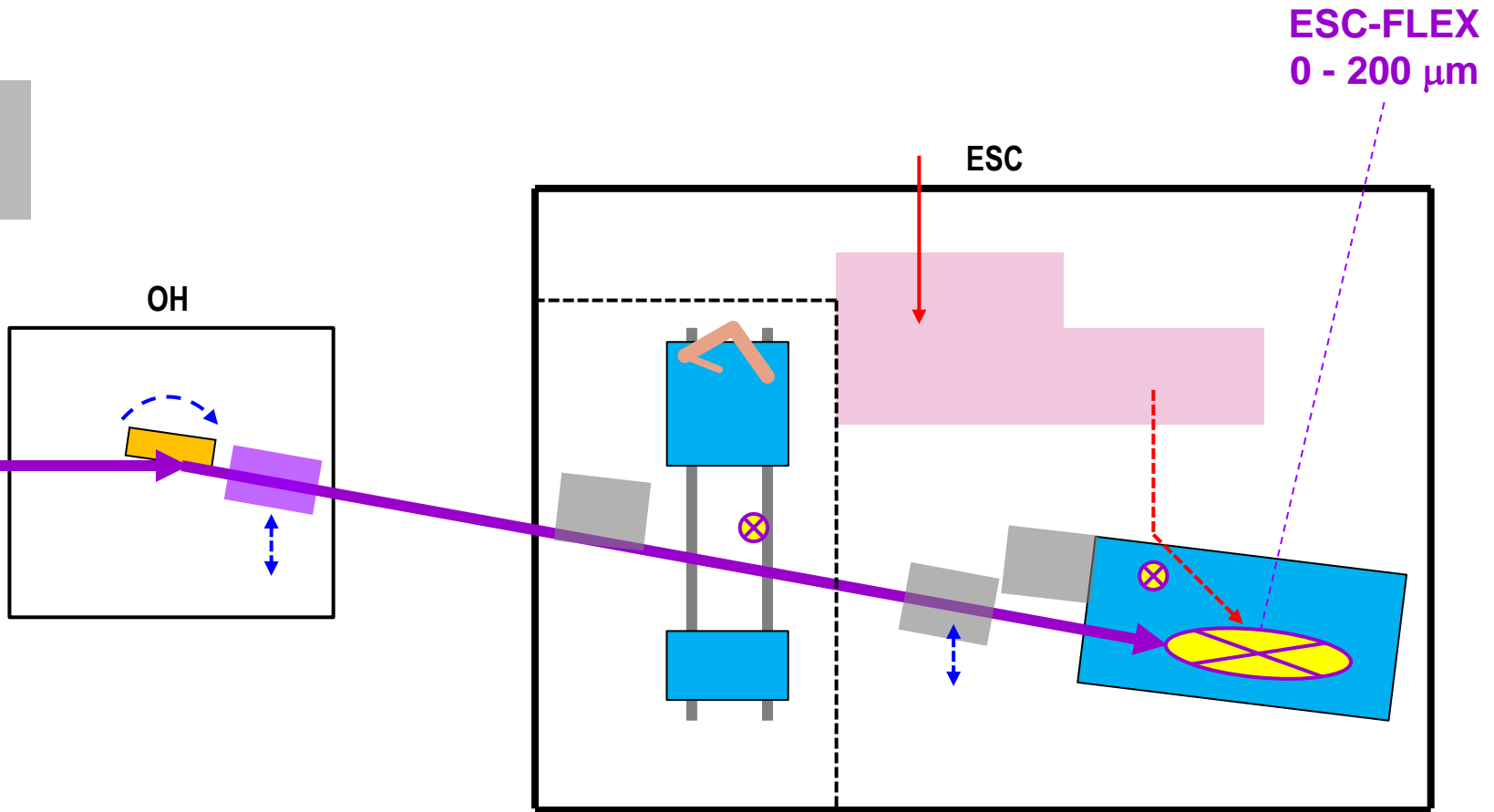


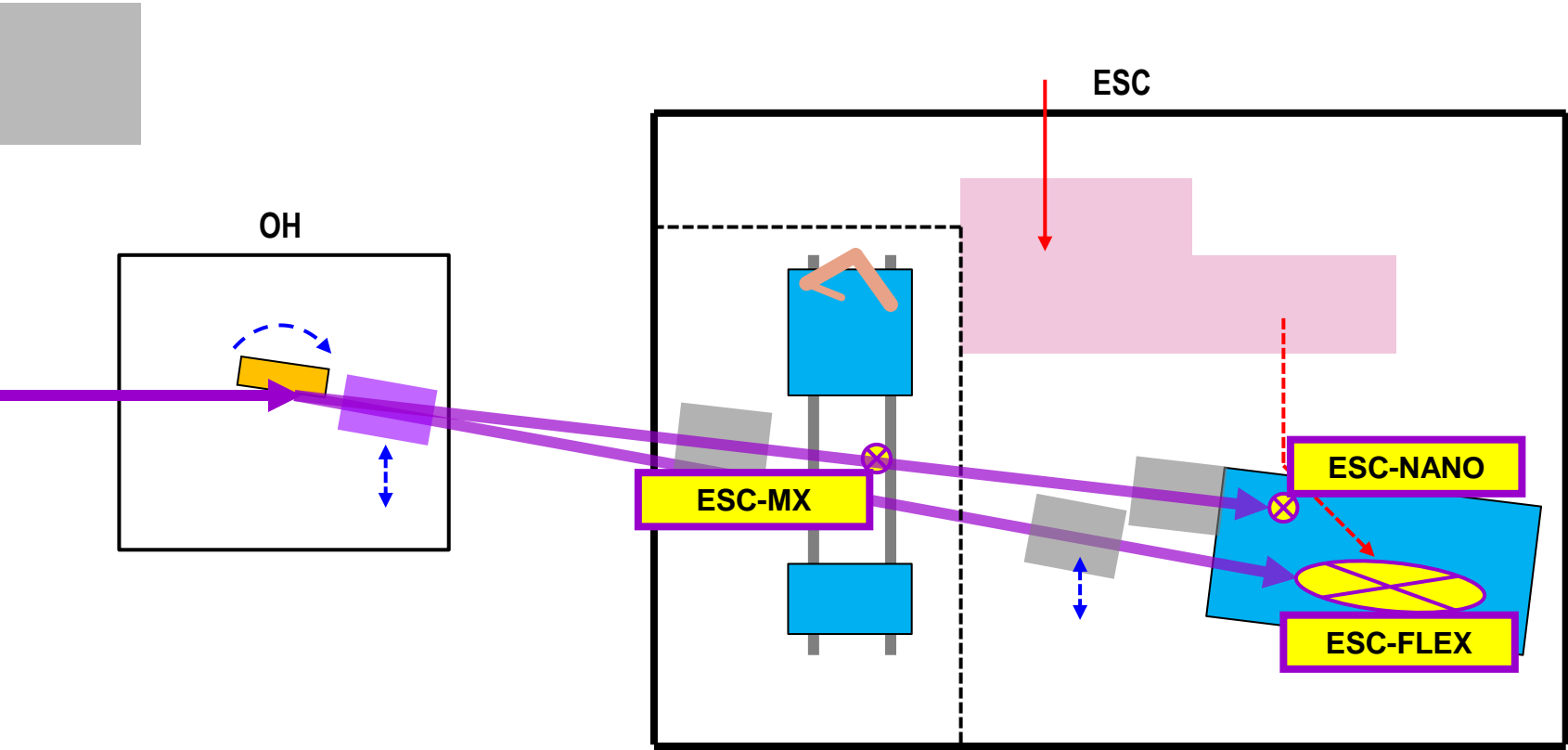
Courtesy Jan Hora



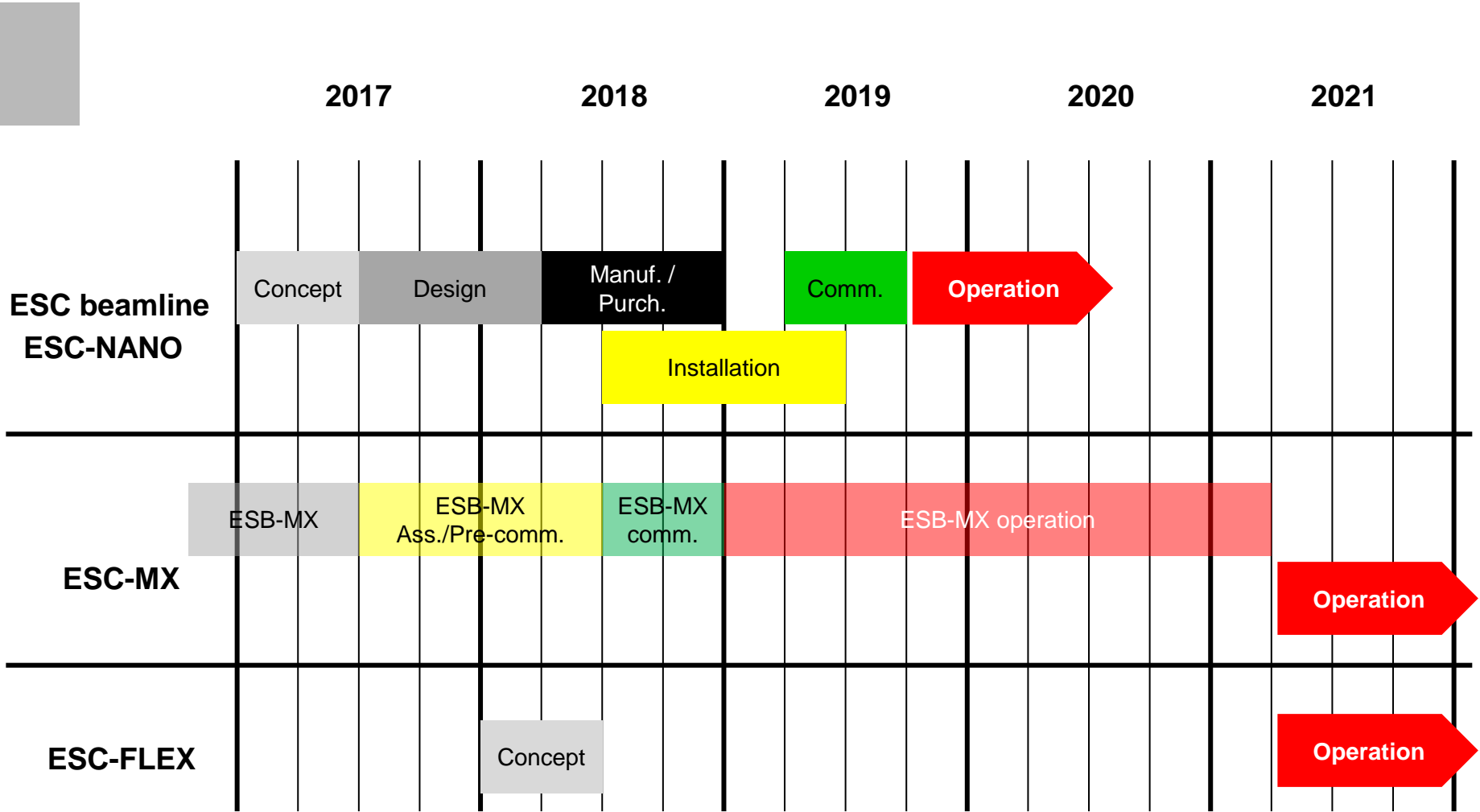








Possible ESC timeplan



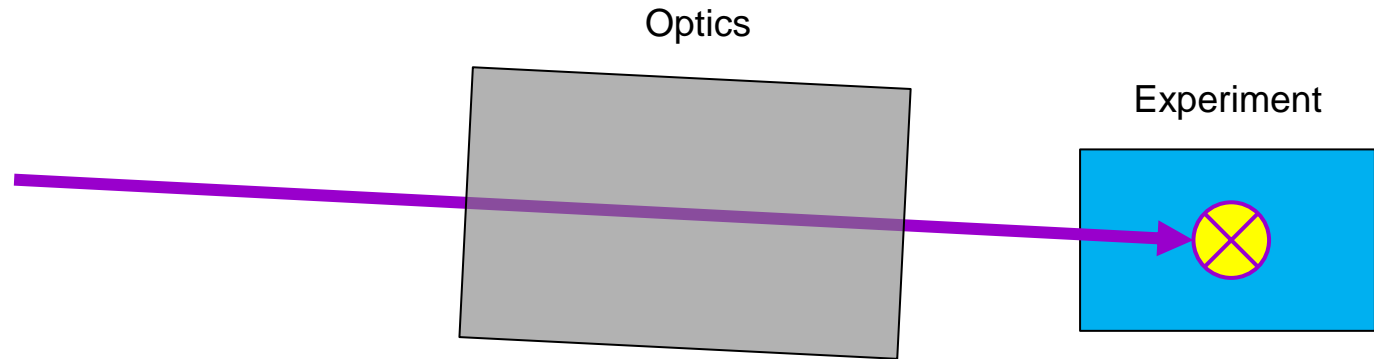
Conclusions

- ESC plans at the very beginning
- Stepwise realization of three instruments in two separated hutches
- Many experimental possibilities
- Combination of nanofocus with SwissFEL attosecond mode will be unique !



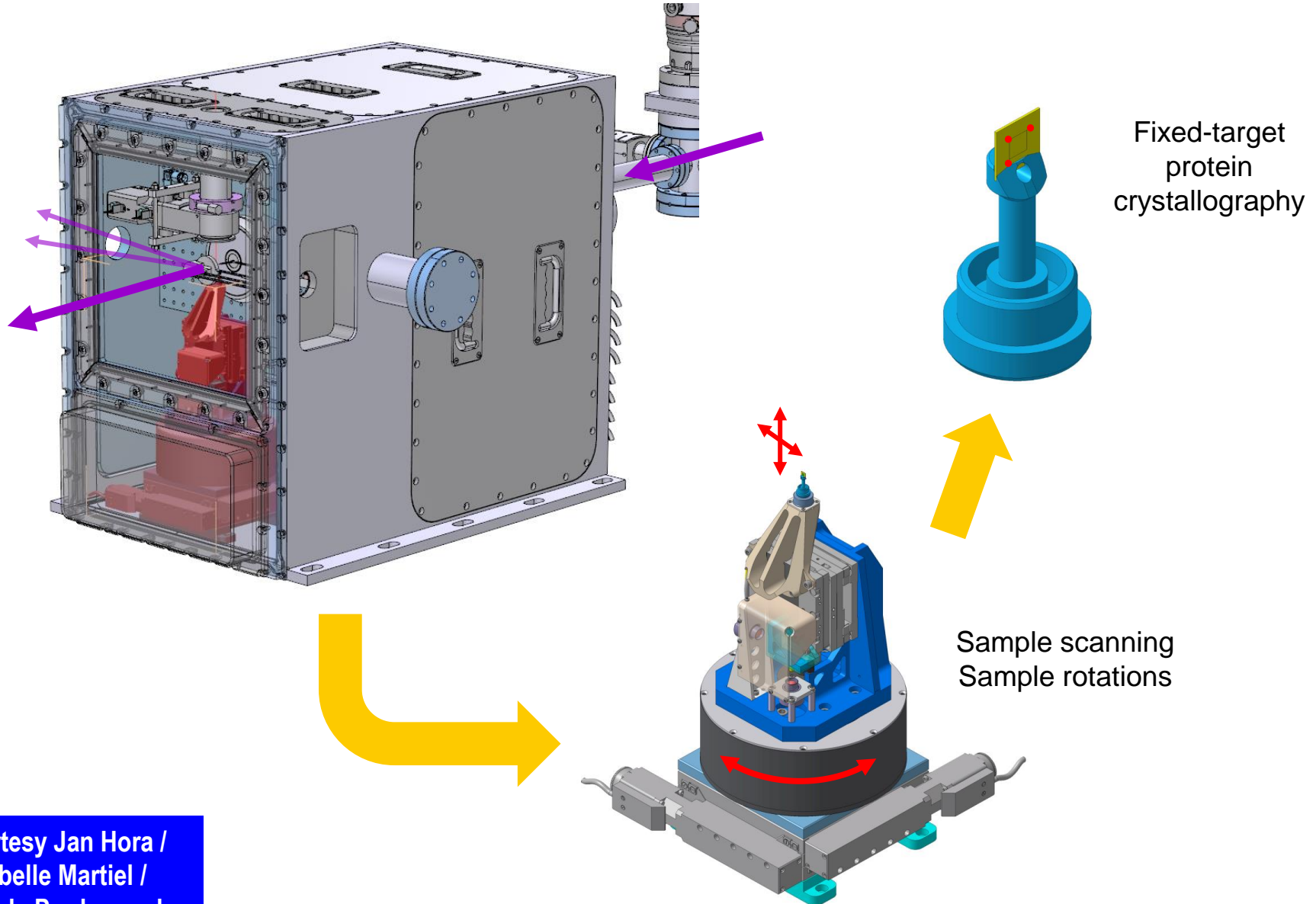
THANK YOU
DANKE
MERCI
ENGRAZIEL
GRAZIE!

First analysis of ESC objectives



	Tentative name	Optics	Experiment
Nanofocus	ESC-NANO	Well defined	Flexible
Protein crystallography	ESC-MX	Well defined	Well defined
Custom	ESC-FLEX	Flexible	Flexible

ESB-MX features



Courtesy Jan Hora /
Isabelle Martiel /
Claude Pradervand