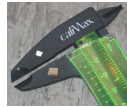


# Estia

## focusing reflectometer for small samples based on the *Selene* guide concept

### optimised for

- $A < 5 \times 10 \text{ mm}^2$
- polarised measurements
- specular reflectivity
- short counting times
- low background
- high  $q_z$  (horizontal scattering plane)



### very high performance for

- $A < 10 \times 50 \text{ mm}^2$
- off-specular reflectivity
- samples with intrinsic background (focusing to detector)

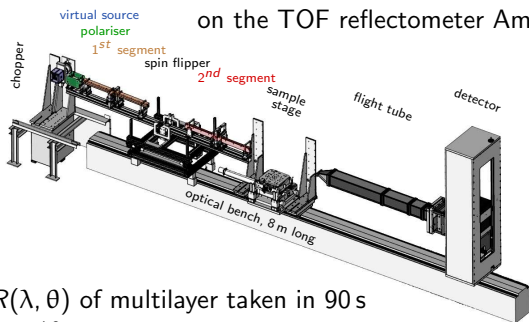
### options / extensions

- in-situ combination with other techniques
- spin-echo techniques
- vertical scattering plane
- $q_z \leq 2.5 \text{ \AA}^{-1}$  for diffraction

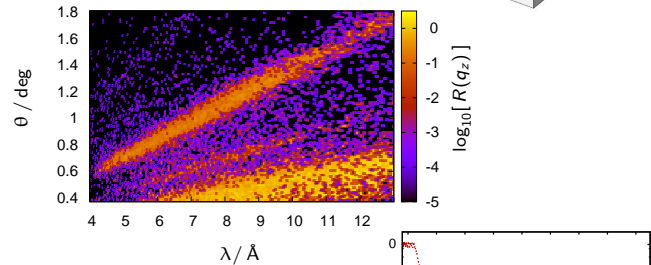


### experience with prototype

on the TOF reflectometer Amor at PSI



$R(\lambda, \theta)$  of multilayer taken in 90 s

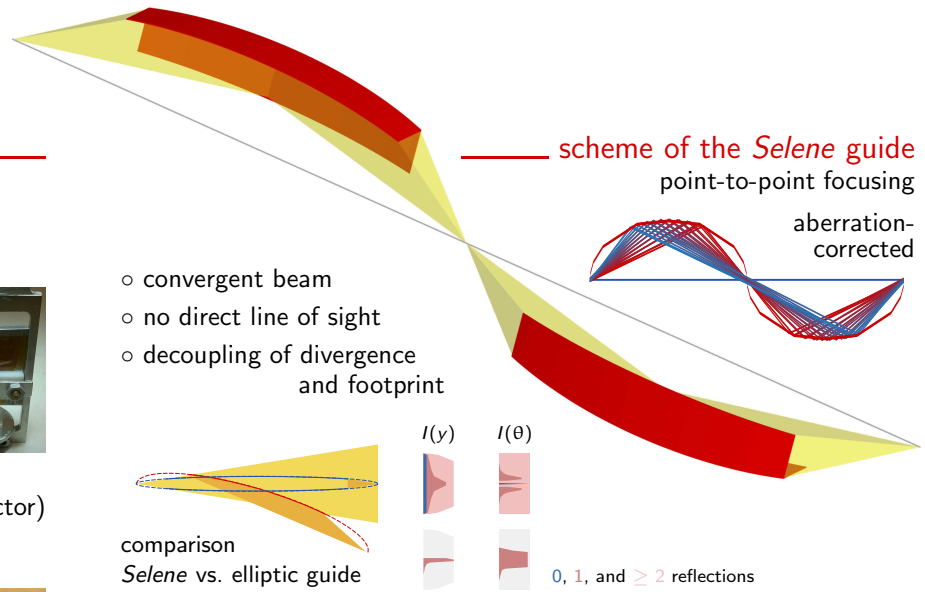


sample:  
 $[\text{Si}/^6\text{LiNbO}_3/\text{Si}/^7\text{LiNbO}_3]_4/\text{Si}$   
footprint  $10 \times 2 \text{ mm}^2$

courtesy of F. Strauß, E. Huger & H. Schmidt, TU Claustal, Germany

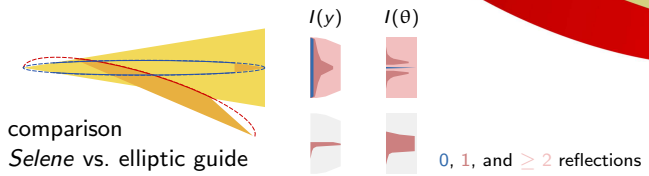
source flux	ESS / SINQ	$\times 150$
guide transmission	<i>Selene</i> / ( <i>Amor</i> + <i>Selene</i> )	$\times 4$
footprint	(sample size $1 \text{ cm}^2$ )	$\times 10$
in total		$\times 6000$

$\Rightarrow q_z$ -range  $0.005 \text{ \AA}^{-1}$  to  $0.05 \text{ \AA}^{-1}$  in one pulse (0.07 s)

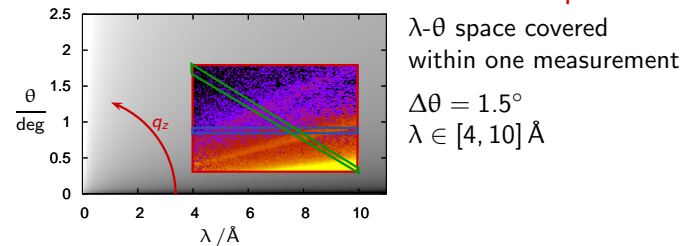


scheme of the *Selene* guide  
point-to-point focusing  
aberration-corrected

- convergent beam
- no direct line of sight
- decoupling of divergence and footprint



### standard operation modes



### almost conventional reflectivity

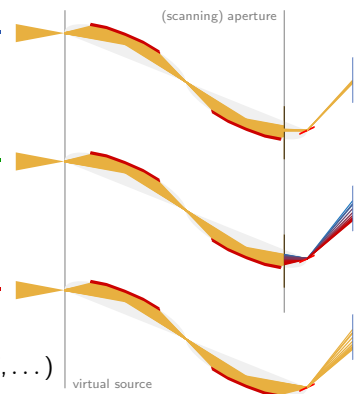
- = TOF
- defined foot-print
- off-specular reflectivity

### $\lambda$ - $\theta$ -encoding

- = TOF( $\theta$ )
- wider  $q_z$ -range
- constant resolution  $\Delta q/q$

### high-intensity specular reflectivity

- = TOF  $\times$   $\theta$ -dispersive
- split-second  $t$ -resolution
- parameter space exploration ( $H, E, T, \dots$ )



### lay-out & dimensions

