Introduction to OASYS

Luca Rebuffi
ANL-APS, XSD-OPT Group

First OASYS School

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Introduction to OASYS

In the next years most of the major synchrotron radiation facilities around the world will upgrade to 4th-generation

Diffraction Limited Storage Rings

Multi-bend-achromat technology

Increased brilliance

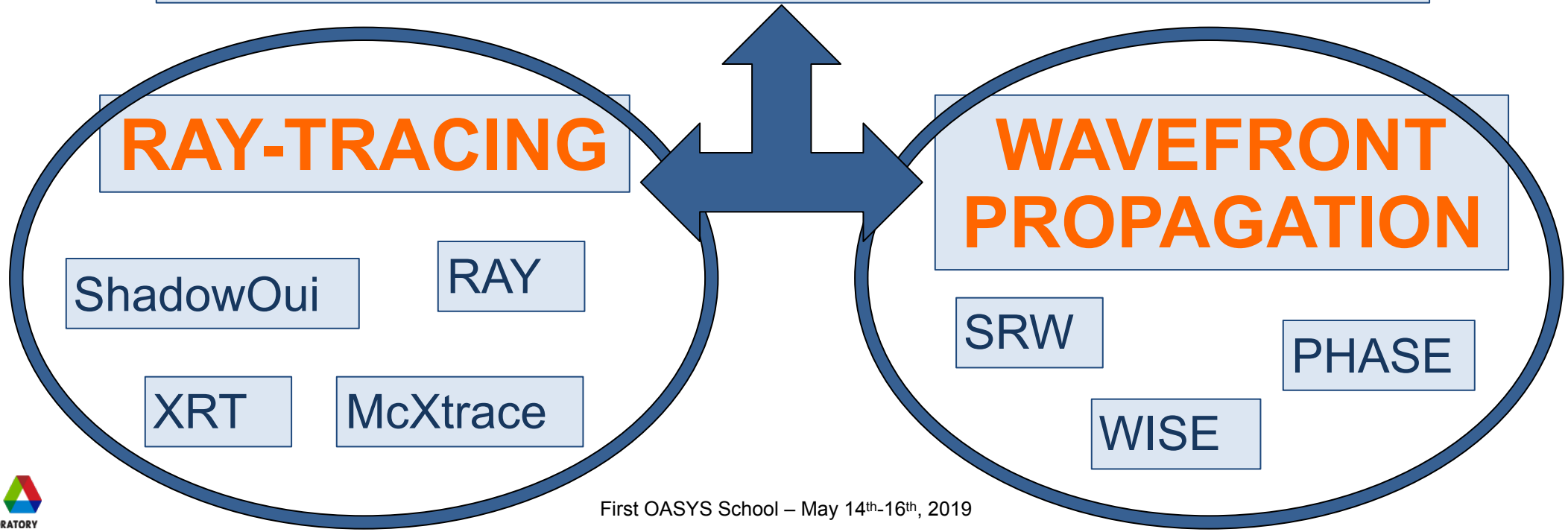
Increased coherence

a huge
challenge
for the optics physicists!!!!

Introduction to OASYS

Computer simulation of light sources and optical components is a mandatory step in the design and optimization of synchrotron and FEL radiation beamlines

different codes for numerical simulations are available, implementing different physical approaches



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APIs tend to be complementary because of the physical models

the APIs and their graphical interfaces of the software are different and can not be interchanged

Need to use not only a single but also both of the physical approaches in a compatible mode

easy and efficient comparison of their results

standardization and definition
of a common data format for describing
synchrotron radiation facilities and beamlines

Introduction to OASYS

- ✓ OASYS = OrAnge SYnchrotron Suite
- ✓ A common platform to build synchrotron-oriented User Interfaces ***that communicate***
- ✓ The upper layer of the application presented to the user

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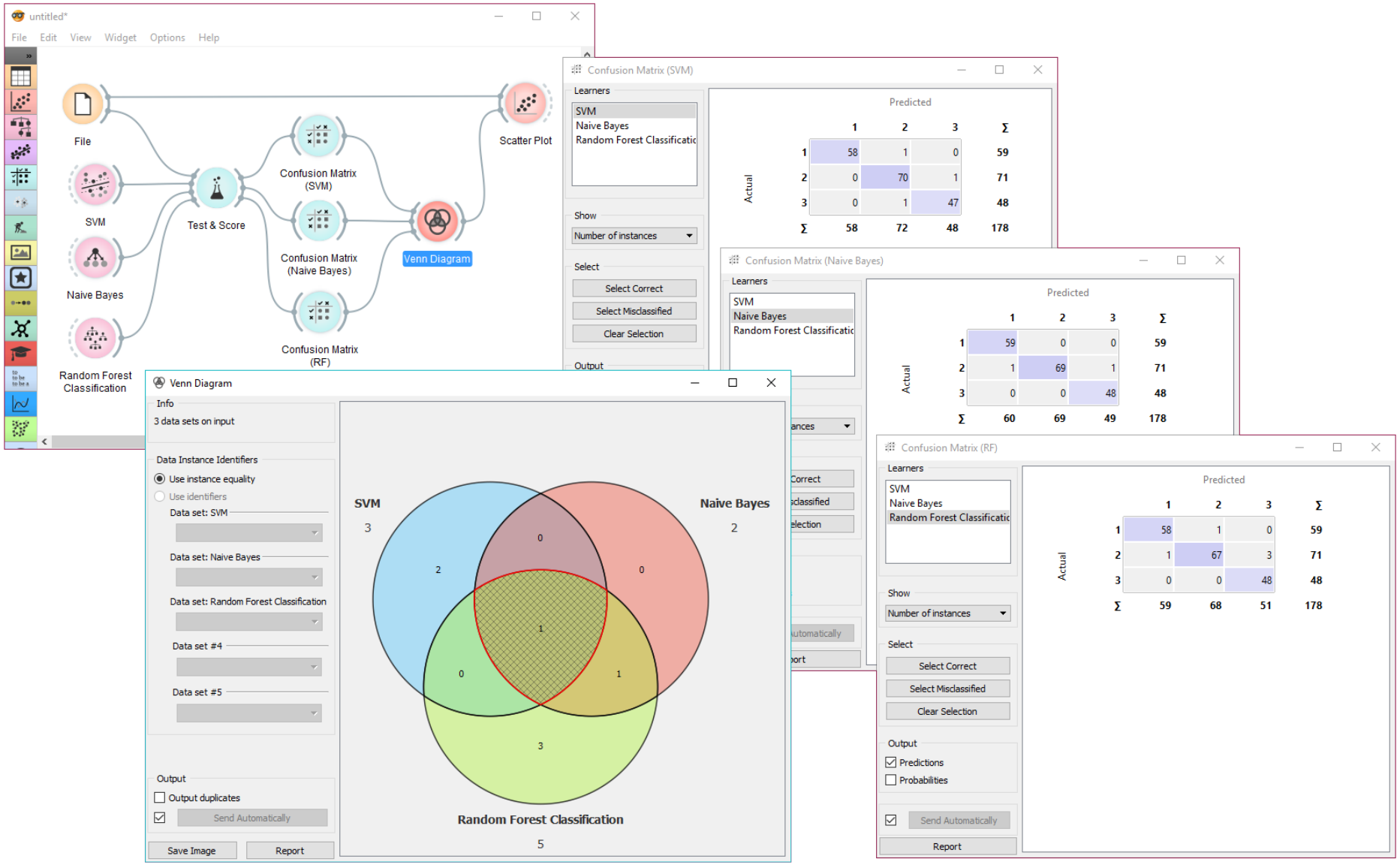

POWERED BY

orange

University of Ljubljana
Faculty of Computer and Information Science

Demšar, J., Curk, T., and Erjavec, A. "Orange: Data Mining Toolbox in Python," Journal of Machine Learning Research 14, 2349−2353 (2013).

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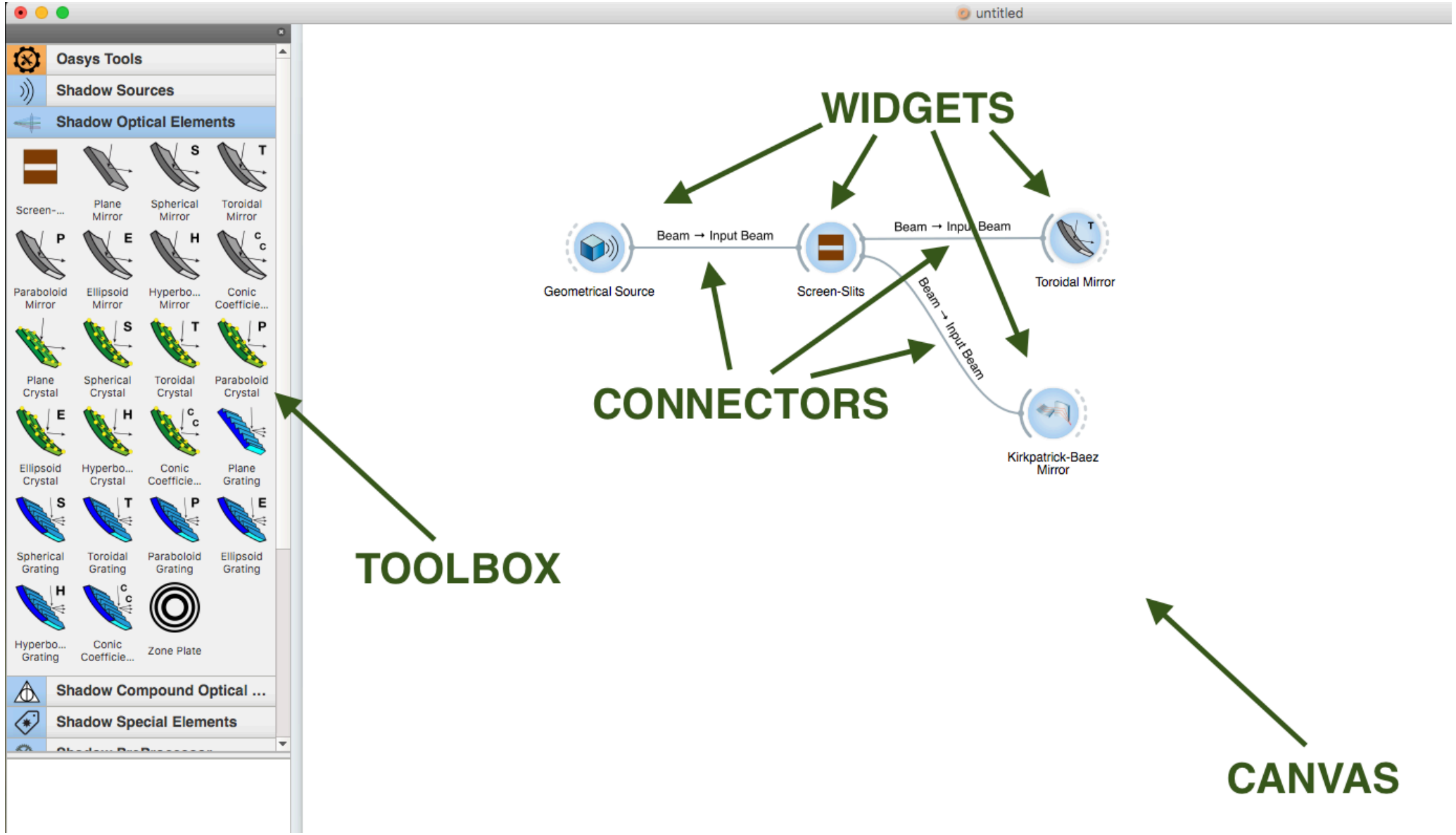

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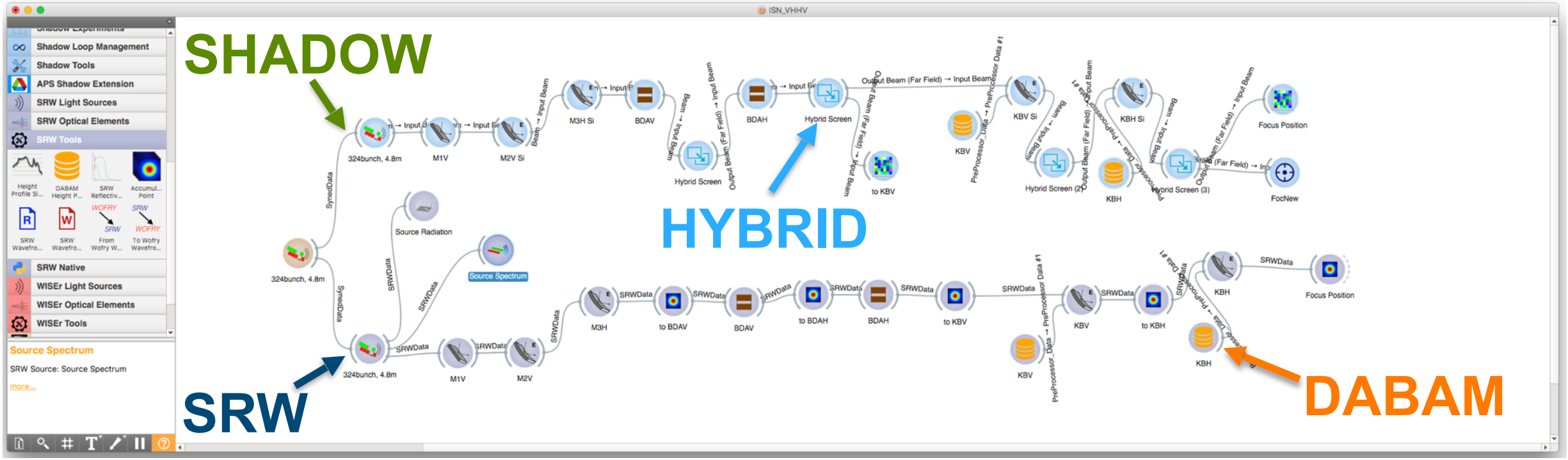
OASYS (OrAnge SYnchrotron Suite) Multiple tools in the same environment



L. Rebuffi & M. Sanchez del Rio, Proc. SPIE 10388, 103880S (2017)

X. Shi et al., J. Synchrotron Rad. 21, 669 (2014)

L. Rebuffi & M. Sanchez del Rio, J. Synchrotron Rad. 23, 1357 (2016)

M. Sanchez del Rio et al., J. Synchrotron Rad. 23, 665 (2016)

https://www.aps.anl.gov/Science/Scientific-Software/OASYS

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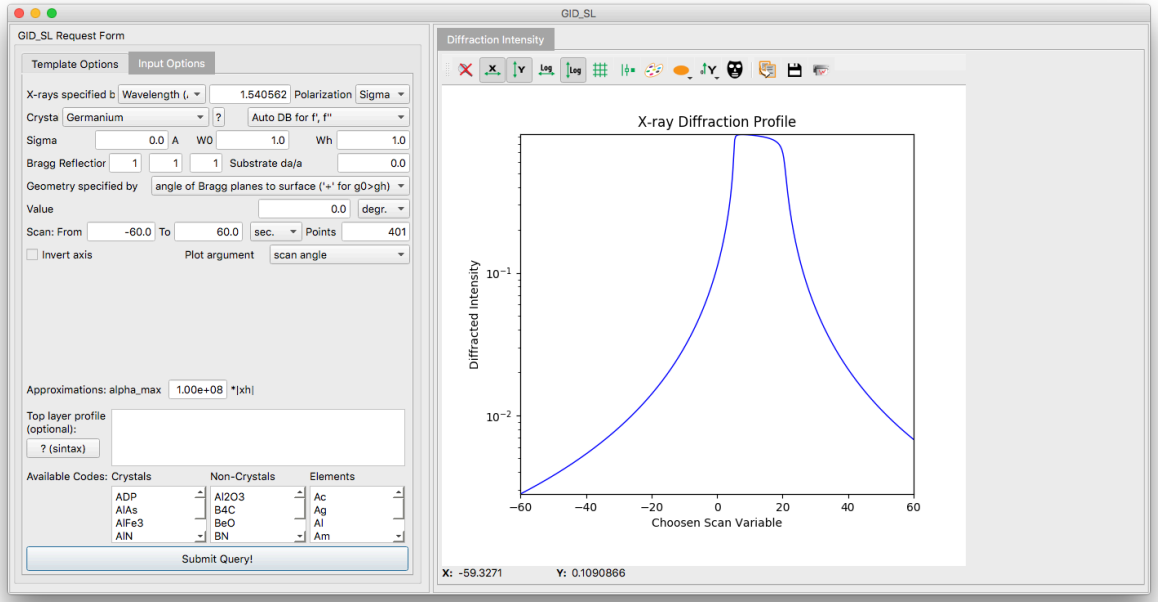
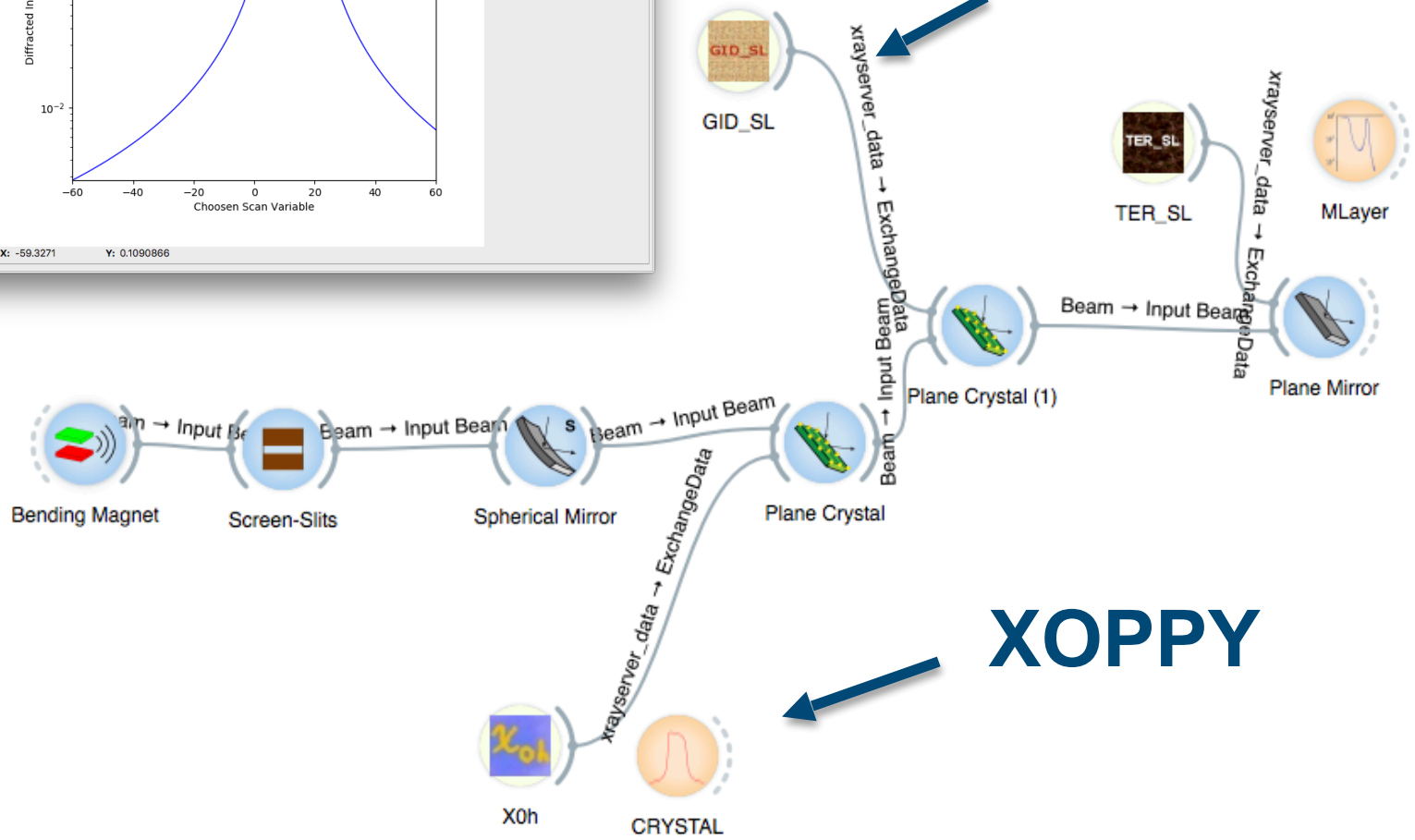


XRayServer



XOPPY

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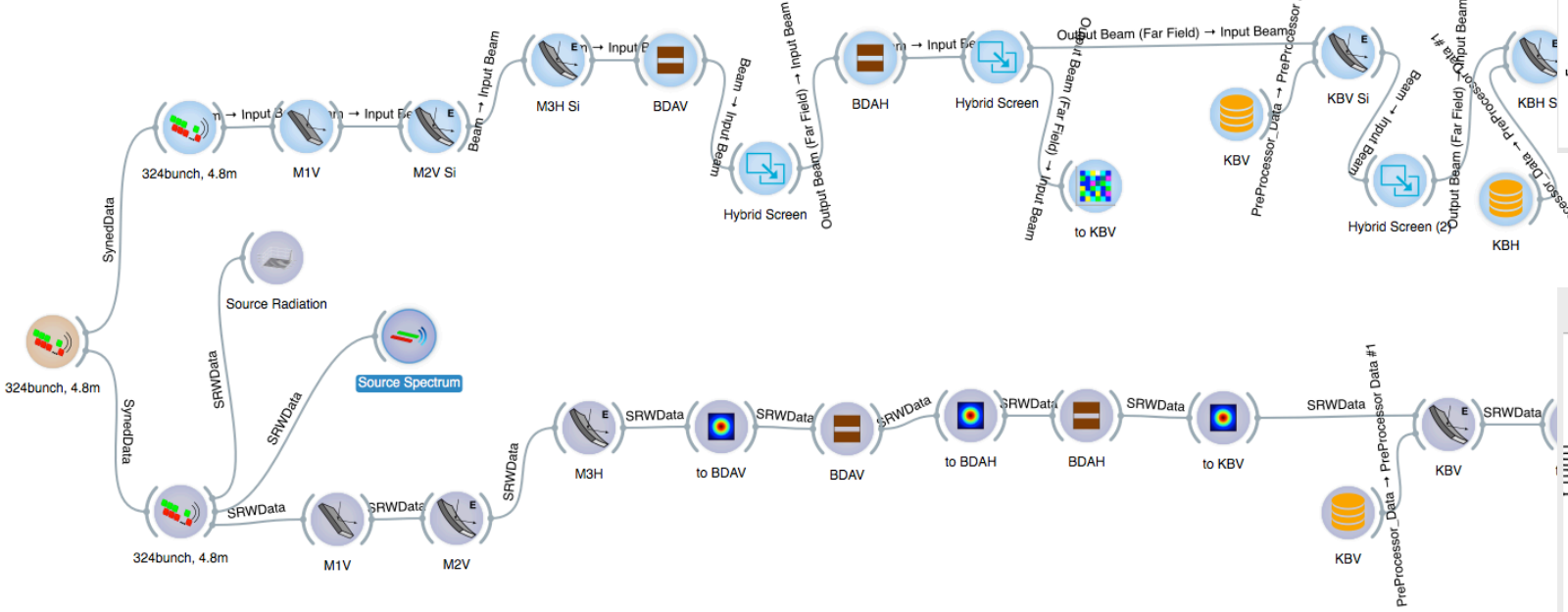
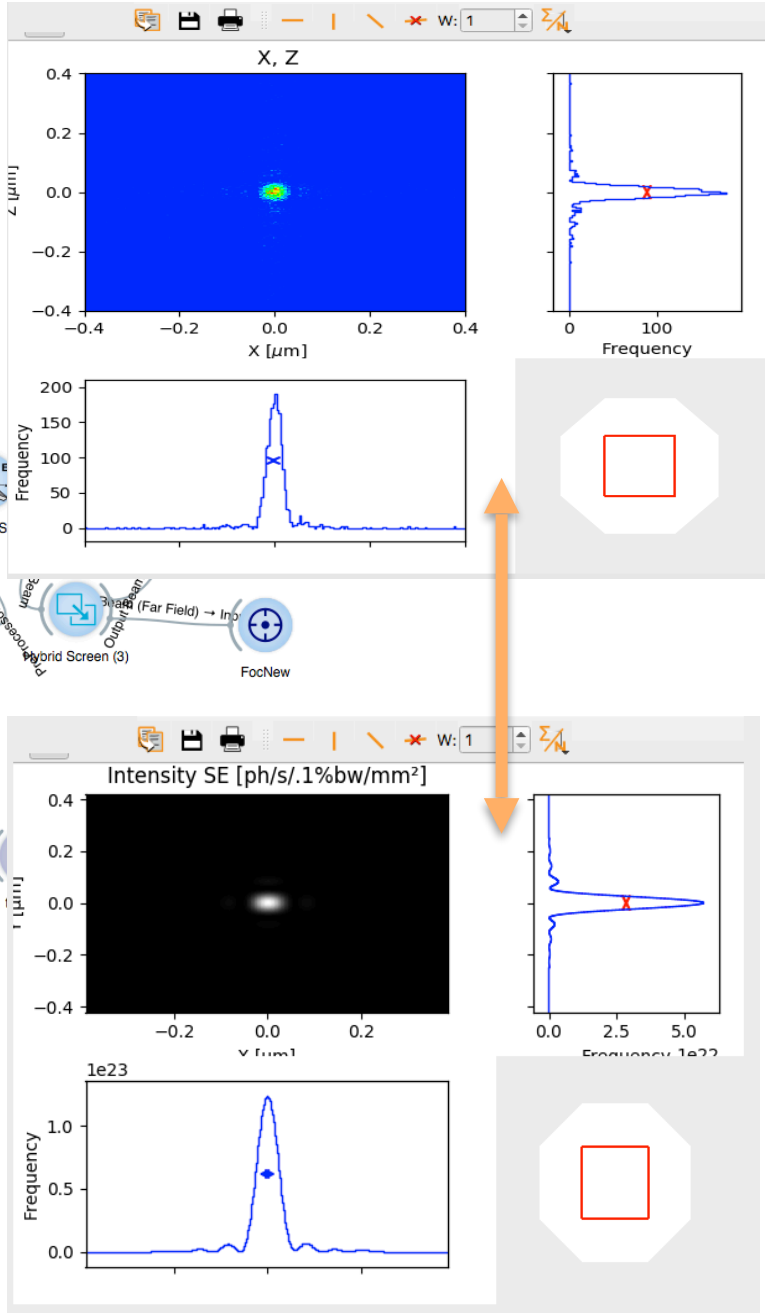
OASYS (OrAnge SYnchrotron Suite)
Multiple tools in the same environment

SHADOW





SRW

Compare and Benchmark Results

L. Rebuffi & M. Sanchez del Rio, Proc. SPIE 10388, 1038808 (2017)

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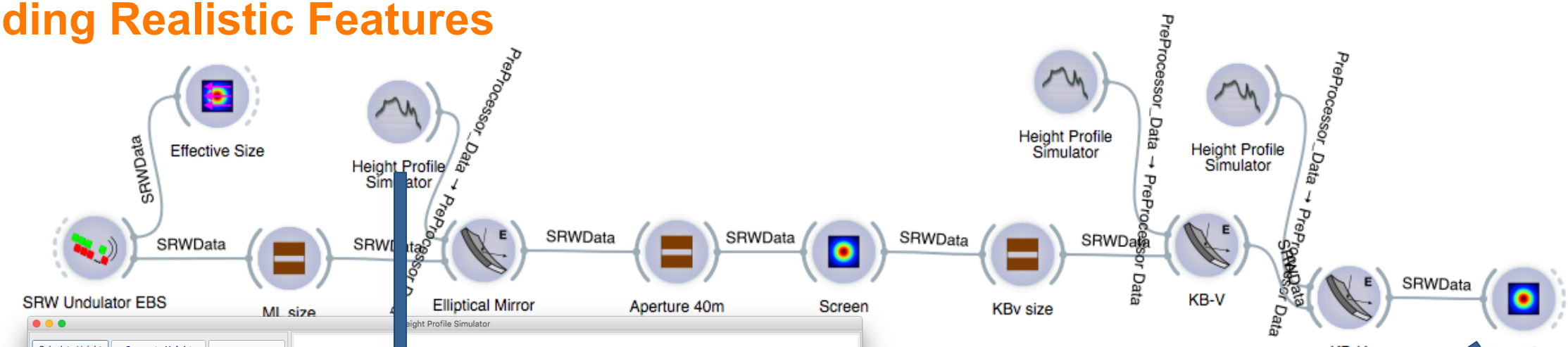
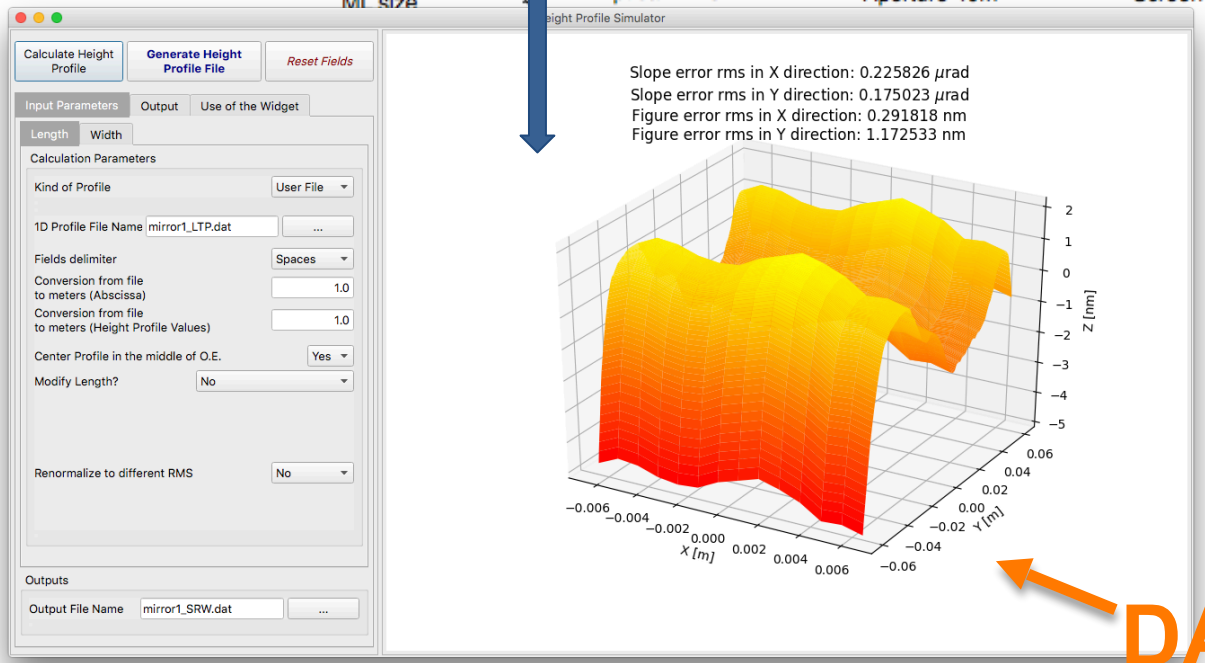
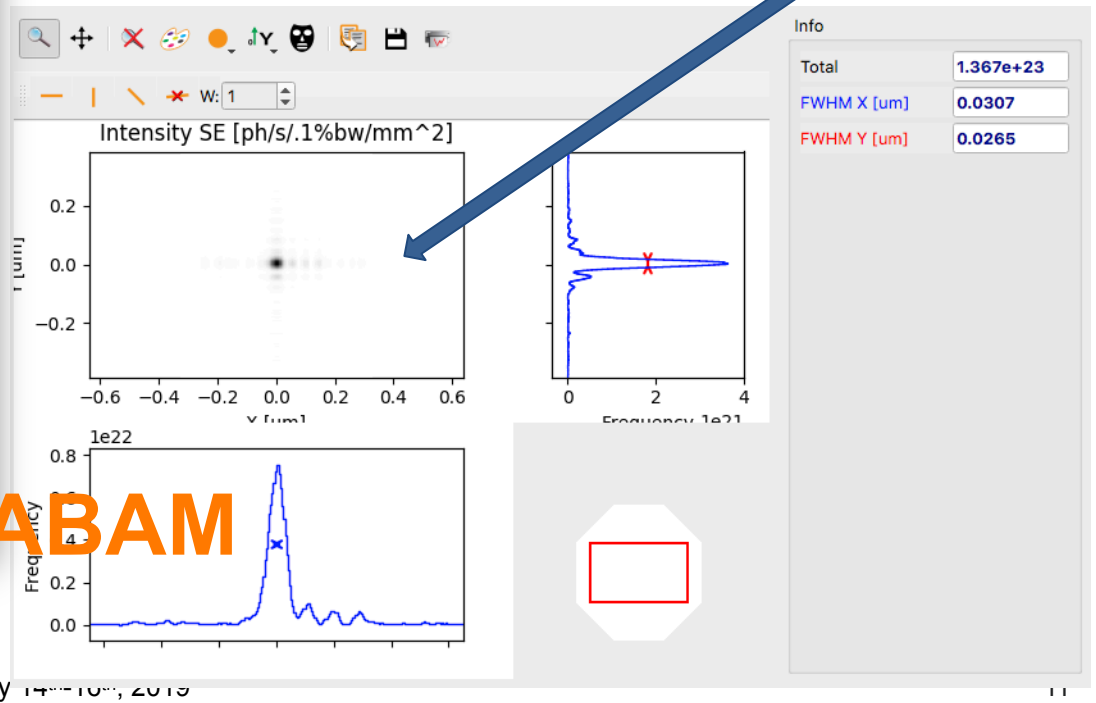
Adding Realistic Features







DABAM

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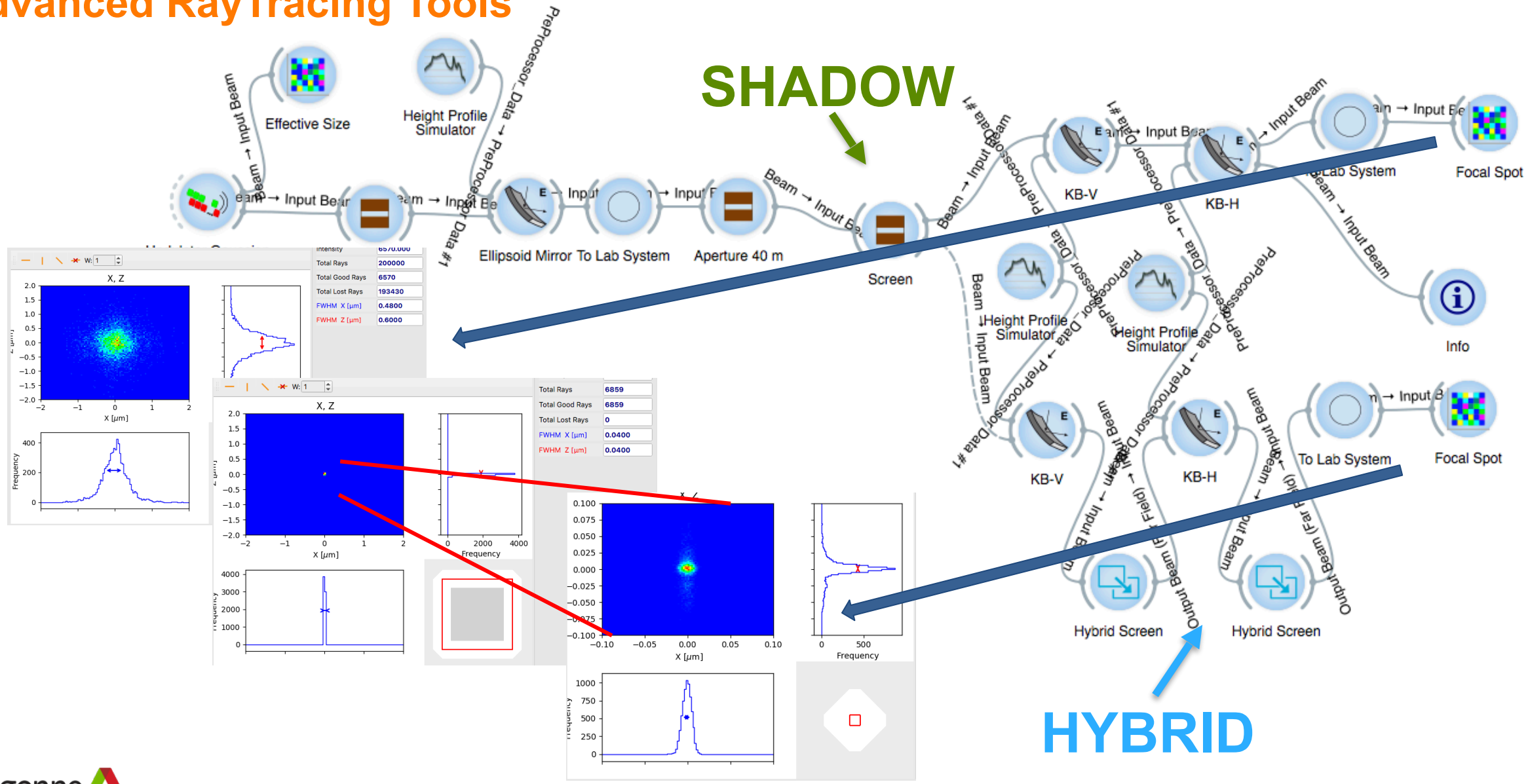
Advanced RayTracing Tools



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Interoperability!