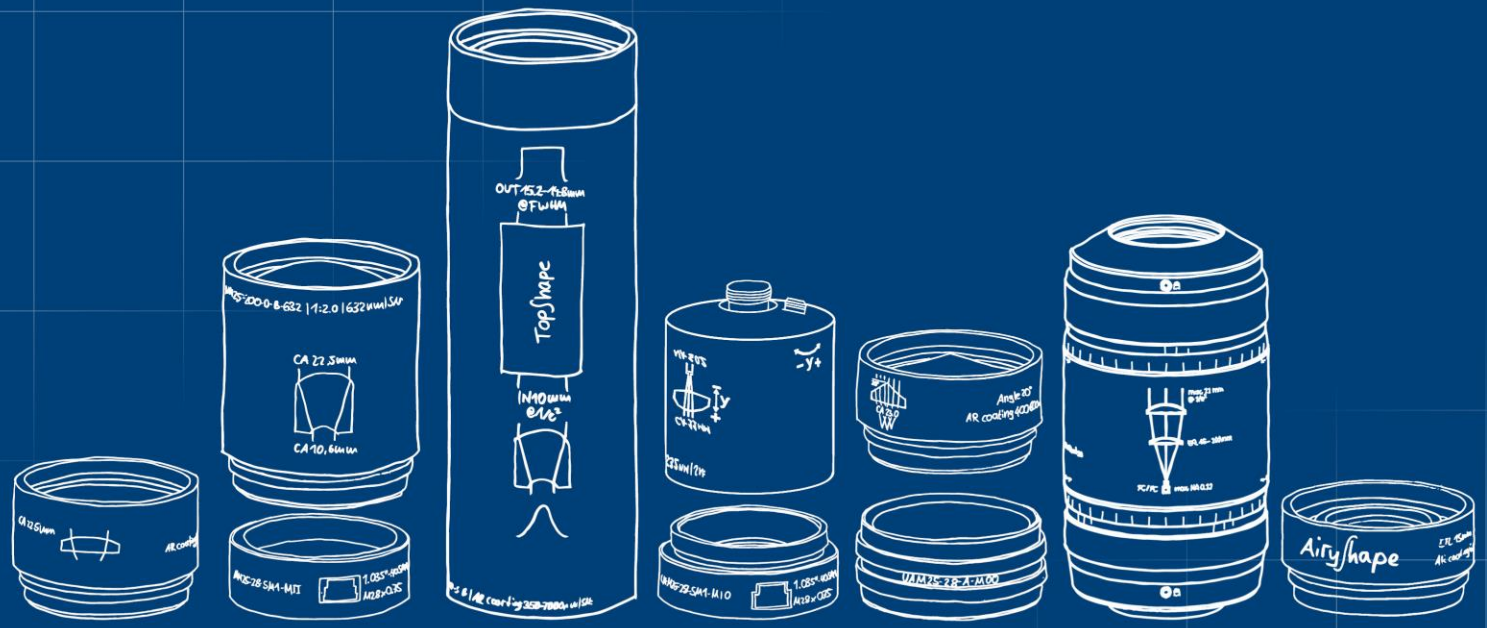


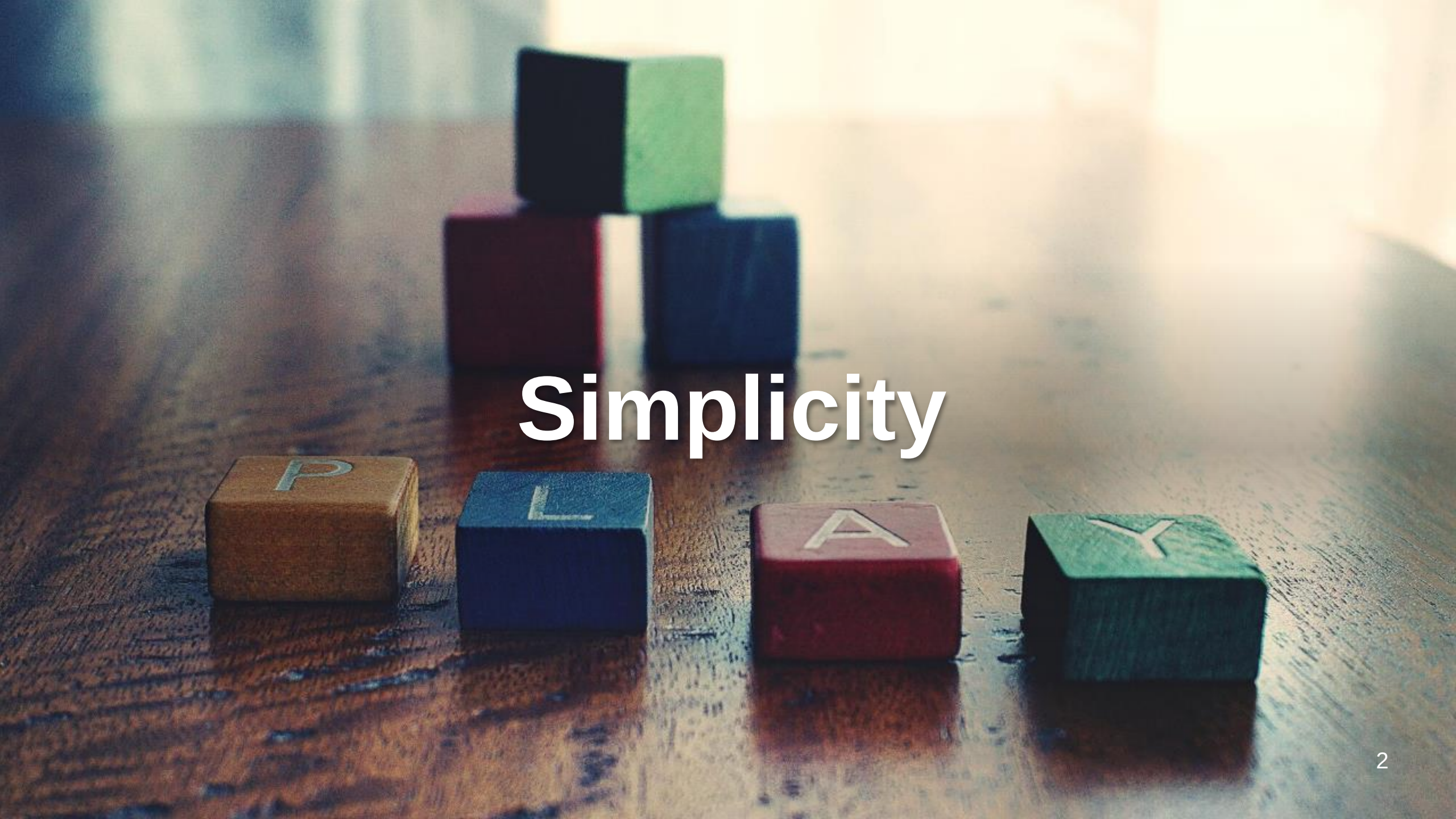
asphericon

Revolutionizing Laser Systems

-

The Power of BeamTuning

W3+ Fair – EPIC TechWatch


Simplicity
P
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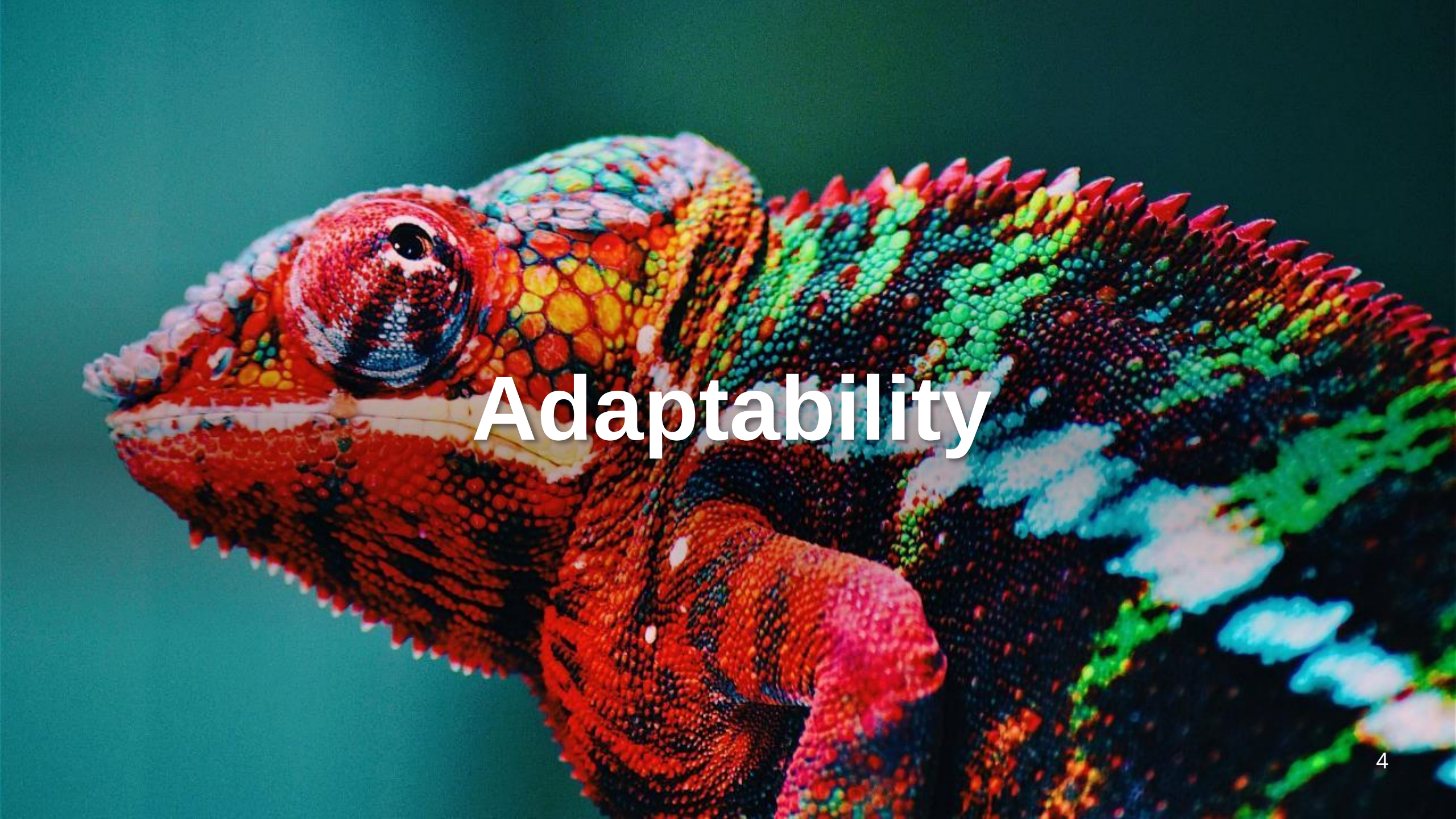
Performance


Adaptability

asphericon BeamTuning

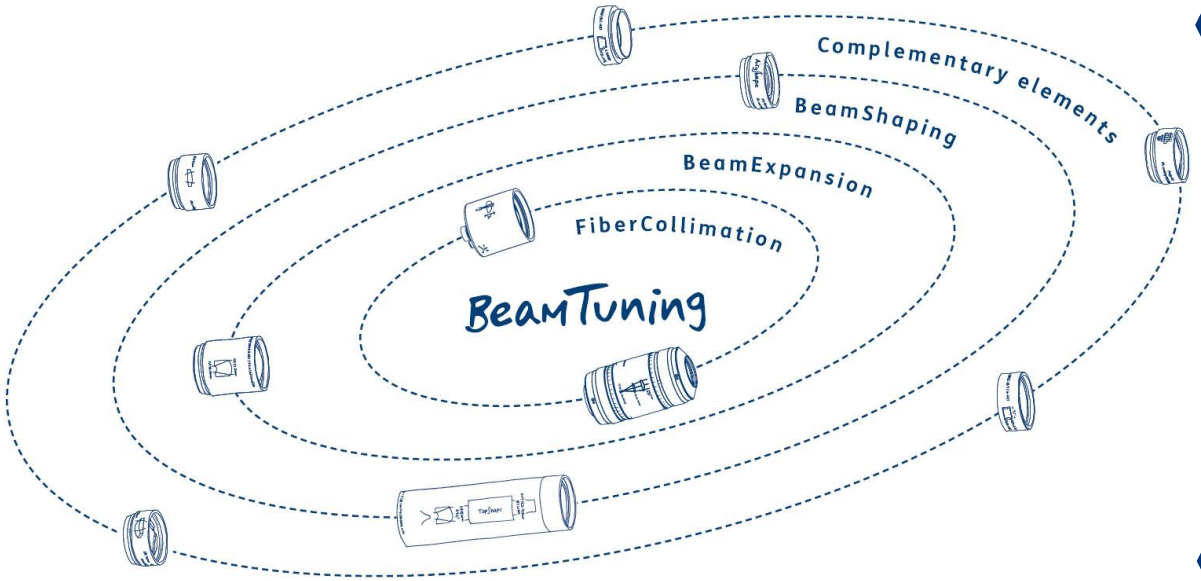
BEAM TU·NING [biːm ‘tjuːniŋ] – TO ADJUST SOMETHING FOR MAXIMUM USABILITY AND PERFORMANCE

BeamExpansion

World‘s first aspheric
beam expansion system

BeamShaping

Innovative beam shaper



FiberCoupling

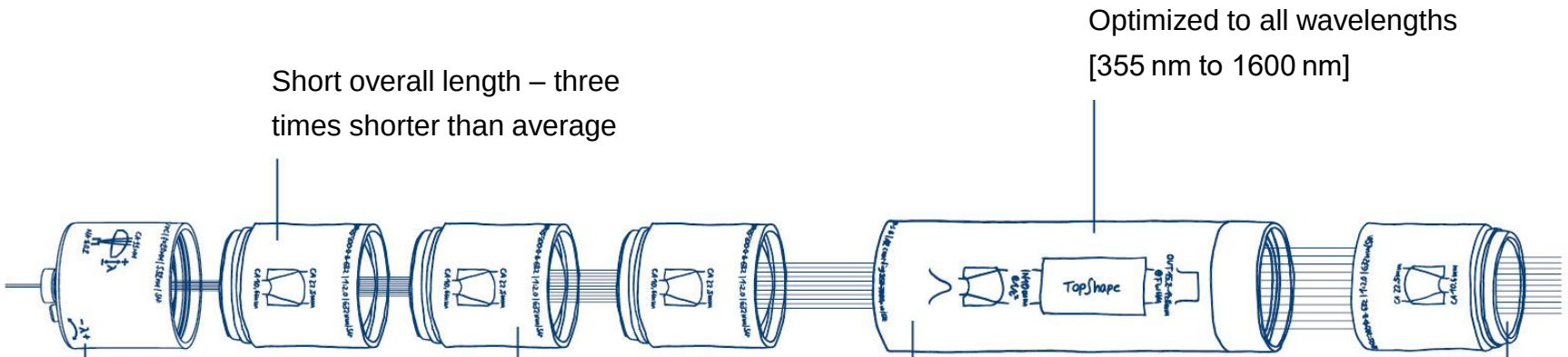
FiberCollimation,
Fiber Coupling

Complements

Adapters, MountedOptics
Opto-Mechanicals

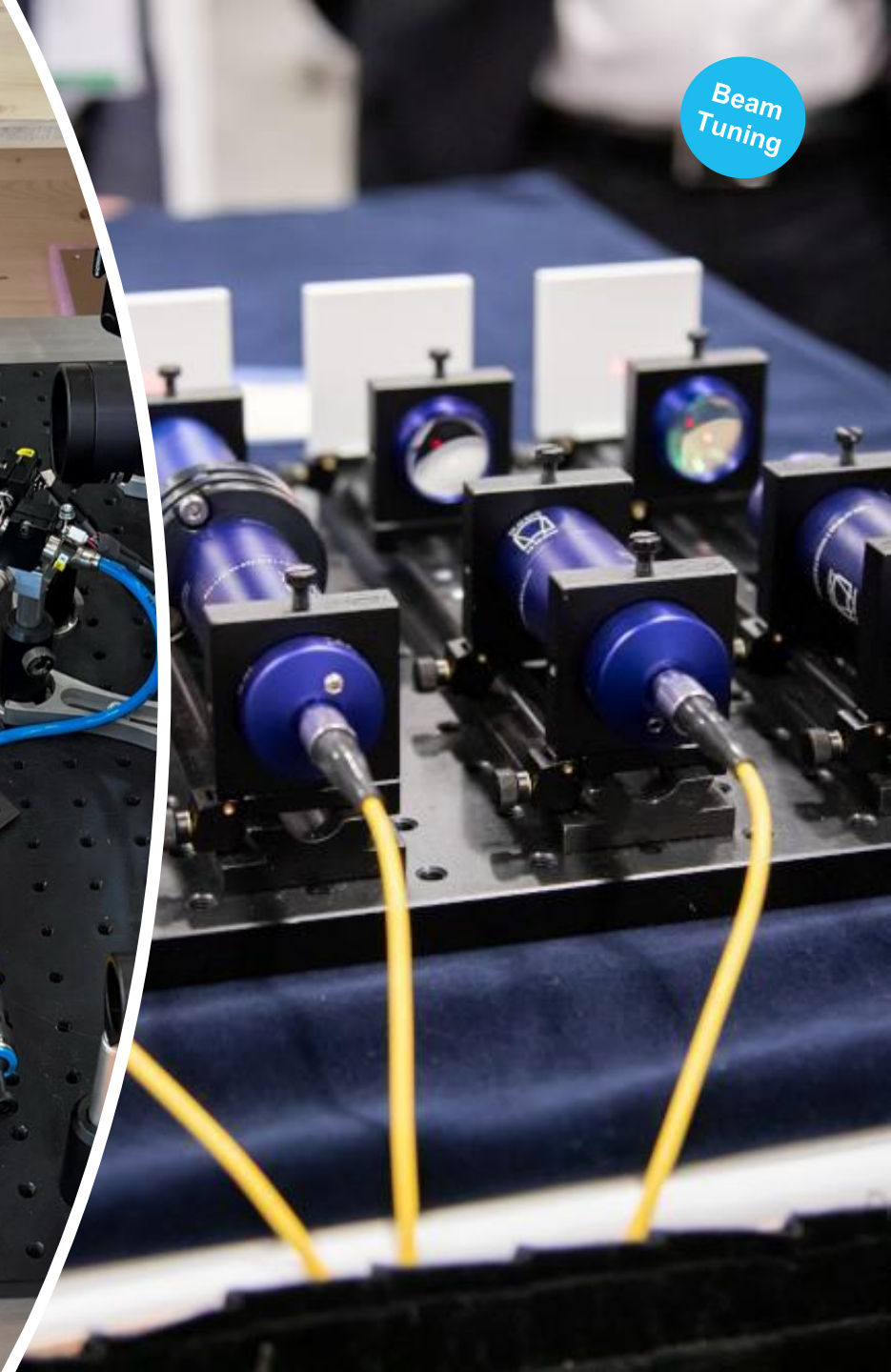
asphericon BeamTuning

FROM THE FIRST ASPHERIC BEAMEXPANDER TO A UNIQUE SYSTEM



Simplicity
Performance
Adaptability

FROM COMPLEX & TIME CONSUMING ALIGNMENT TO EASY INTEGRATION



Deep Dive into our BeamShaping World

asphericon BeamTuning

THE NEXT LEVEL OF REFRACTIV BEAM SHAPING

a|AiryShape

- Generates different beam profiles (Top-Hat, Donut and Beam Waist)
- Scalable input and output beam
- Optimized for 300 nm – 1600 nm

a|SqAiryShape

- Generates different squared Top-Hat beam profiles (Top-Hat, Donut and Beam Waist)
- Profile size easily scalable by focal length
- Optimized for 300 nm – 1600 nm

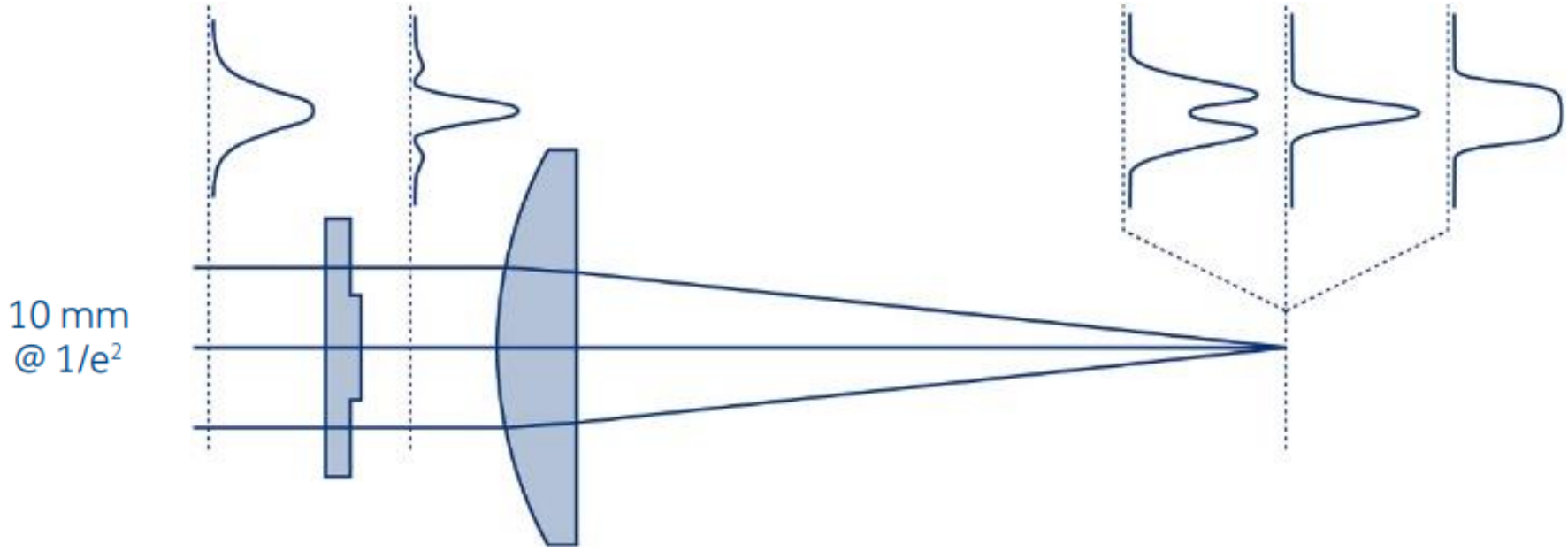
a|TopShape

- Transforms collimated Gaussian beams into collimated Top-Hat beams (320 - 2500 nm)
- Propagation depth (with beam uniformity < 0.1):
  - a|TopShape: At least 300 mm
  - a|TopShape LD: up to 1.5 m
  - a|TopShape LDX: At least 1.5 m, shiftable to longer working distances

a|AiryShape and a|SqAiryShape

BEAM SHAPING IN THE FOKUS

= The working principal

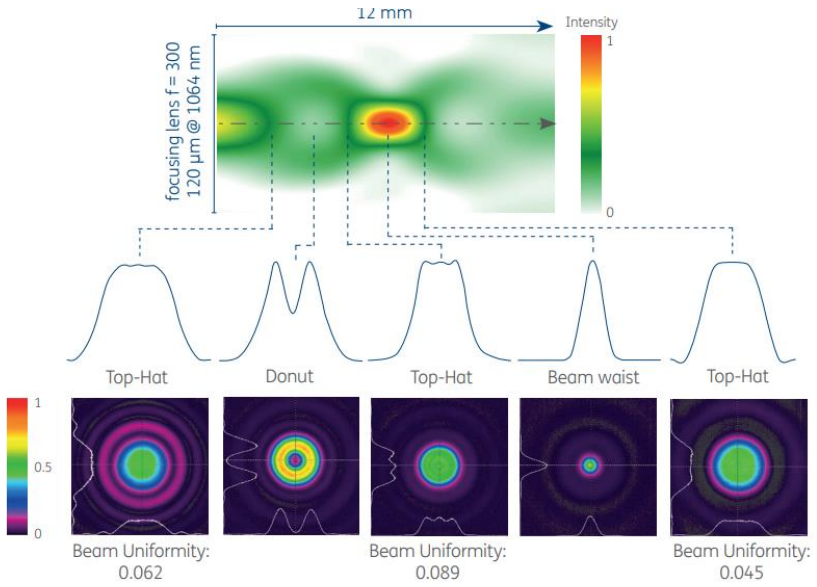


= The beam shapers a|AiryShape and a|SqAiryShape enable, in combination with a focusing lens, the transformation of collimated Gaussian beams into diff erent focused round (a|AiryShape) and squared (a|SqAiryShape) beam profiles

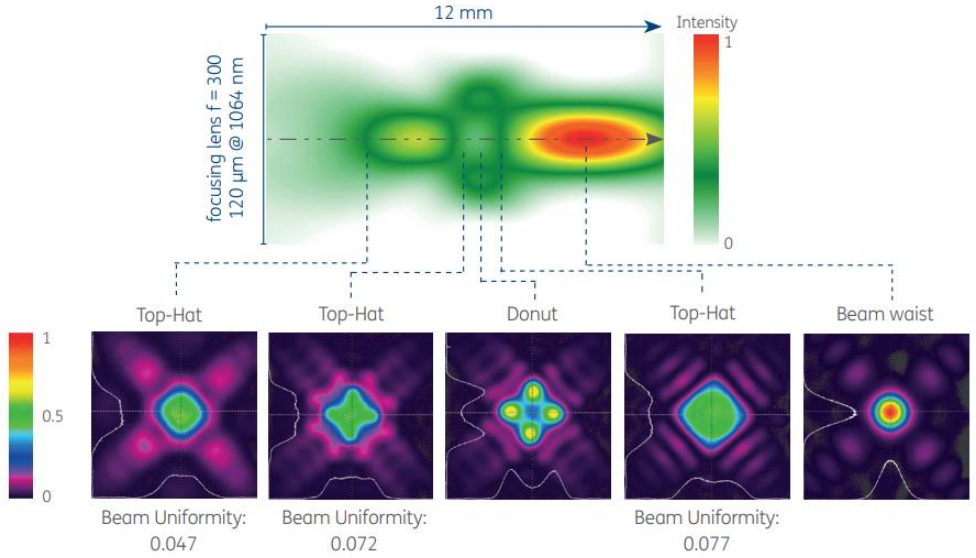
a|AiryShape and a|SqAiryShape

BEAM SHAPING IN THE FOKUS

= a|AiryShape BeamProfiles in the focal area

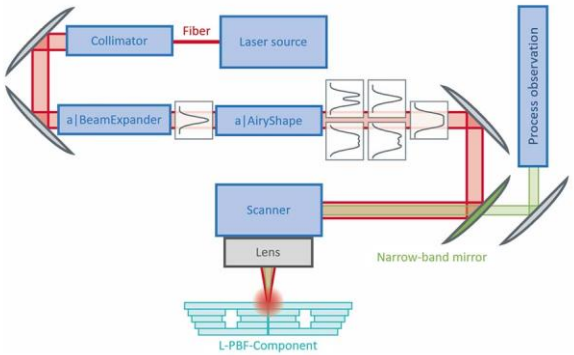


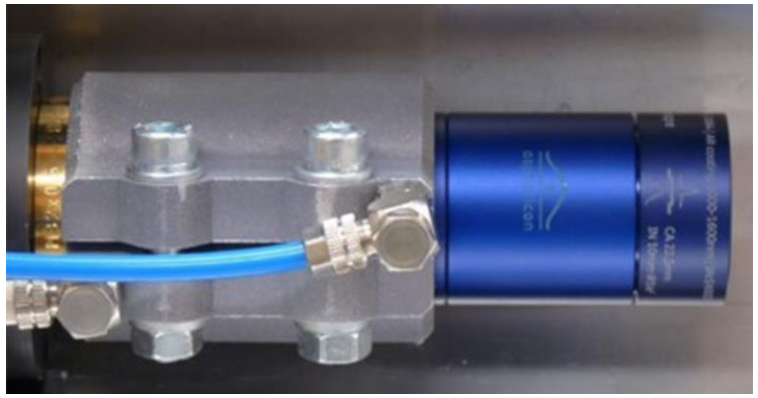
= a|SqAiryShape Beam Profiles in the foclal area

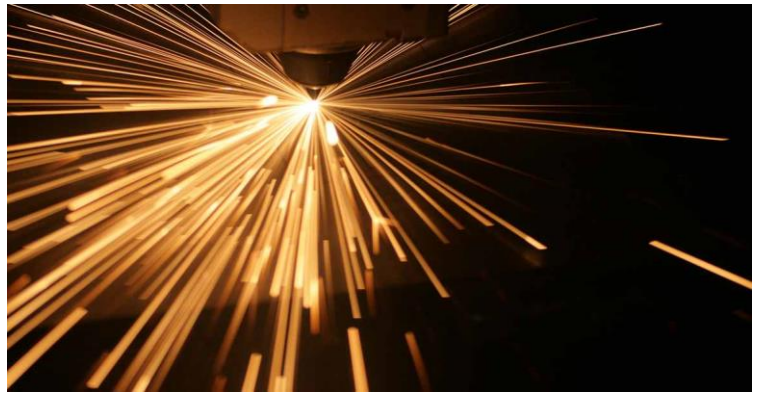


lfw – Beam shaper for laser welding

BEAMTUNING PRODUCTS FOR OPTIMIZED WELD SEAMS



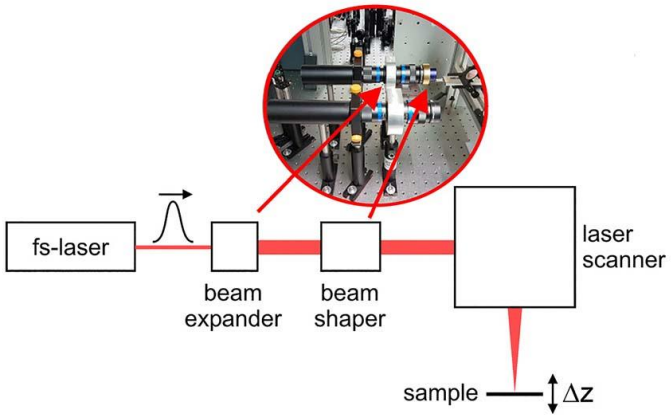


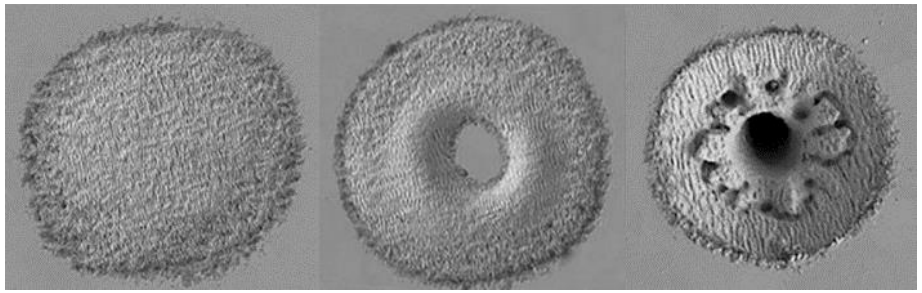


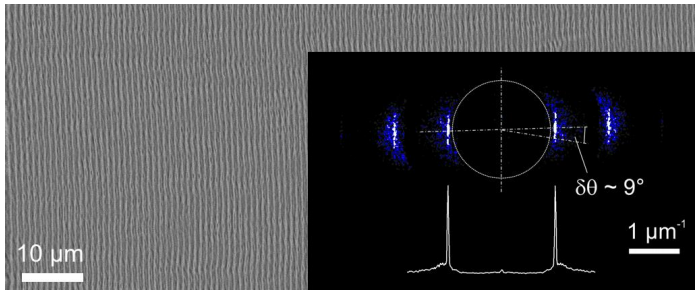
- Integration of a|BeamExpander (for beam expansion) and a|AiryShape (generation of different focused profiles, e.g. Top-Hat, Donut) into existing system technology
- Improvement of process stability as well as outgassing behavior for generation of high-quality, pore-free and gas-tight weld seams (without edge/root notches)
- Reduction of spattering and the production time

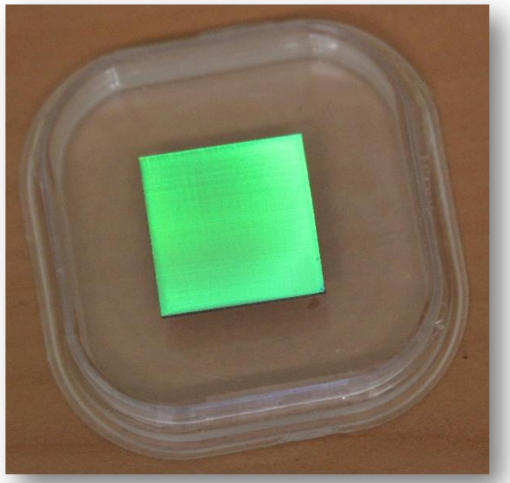
OSIM – Laser-induced structuring

SURFACE FUNTIONALIZATION WITH TAILORED TOP-HATS







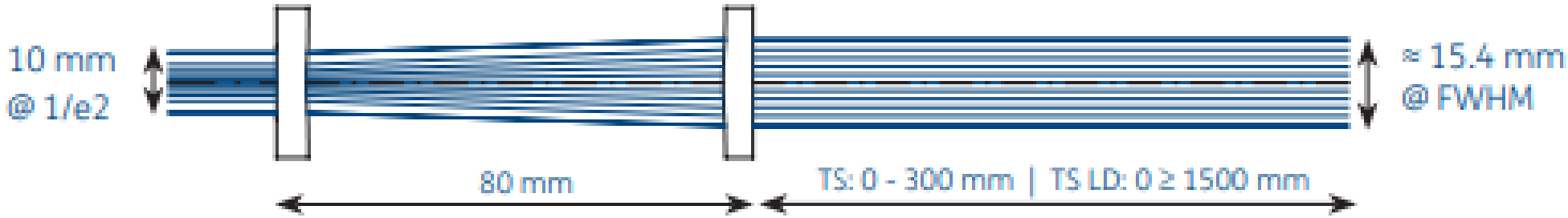


- Together with Otto-Schott-Institute für material research (OSIM) in Jena, impacts of Top-Hat intensity distributions were investigated with respect to their suitability for the generation of laser-induced periodic surface structures (LIPSS) on stainless steel
- Results:
  - Doubling of scanning velocity
  - Reduction of processing time by a factor of 2 with constant surface structure quality

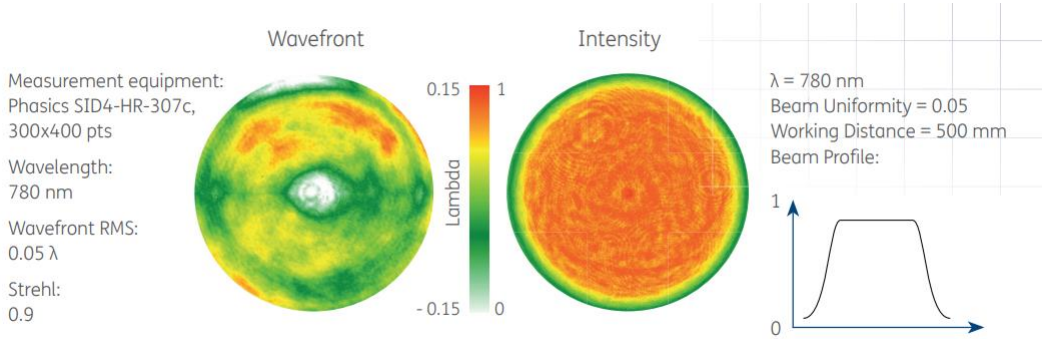
a|TopShape and a|TopShape LD

COLLIMATED BEAM SHAPING

= The working principal

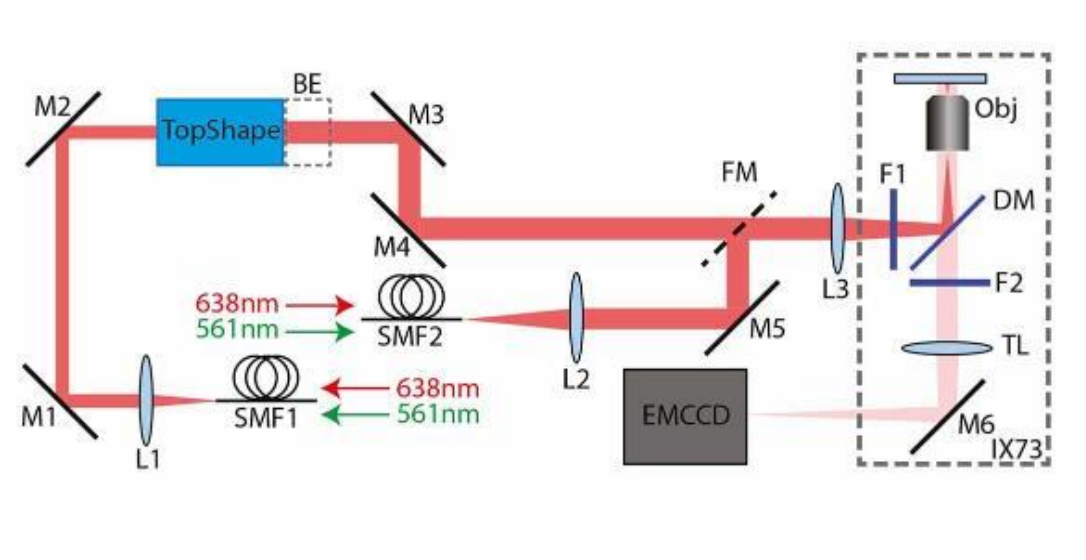


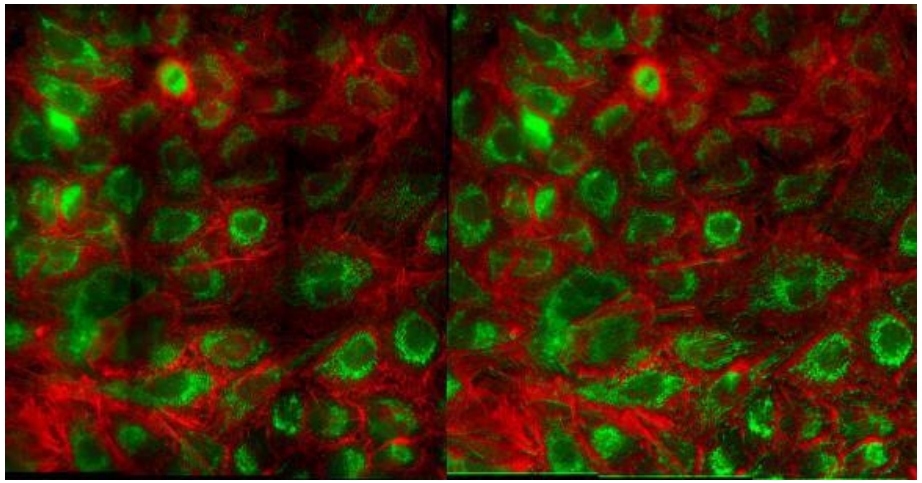
= The a|TopShape transforms collimated Gaussian beams into slightly enlarged (M ≈ 1.4) collimated beams with a uniform intensity distribution



CREOL – Beam shaper for microscopy

HIGH PERFORMANCE WITH UNIFORM ILLUMINATION IN (FLUORESCENCE) MICROSCOPY





- College of Optics and Photonics/University of Central Florida (CREOL) worked on further development of a laser-based microscope set-up for uniform illumination
- asphericon's TopShape and BeamExpander allow the transformation of Gaussian beams into a flat Top-Hat profile and thus the uniform illumination of the slide
- Homogeneity of illumination: > 95 %

So Let‘s Shape YOUR Application

HIGH-RESOLUTION OPTICS AND SYSTEMS FOR YOU

asphericon

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