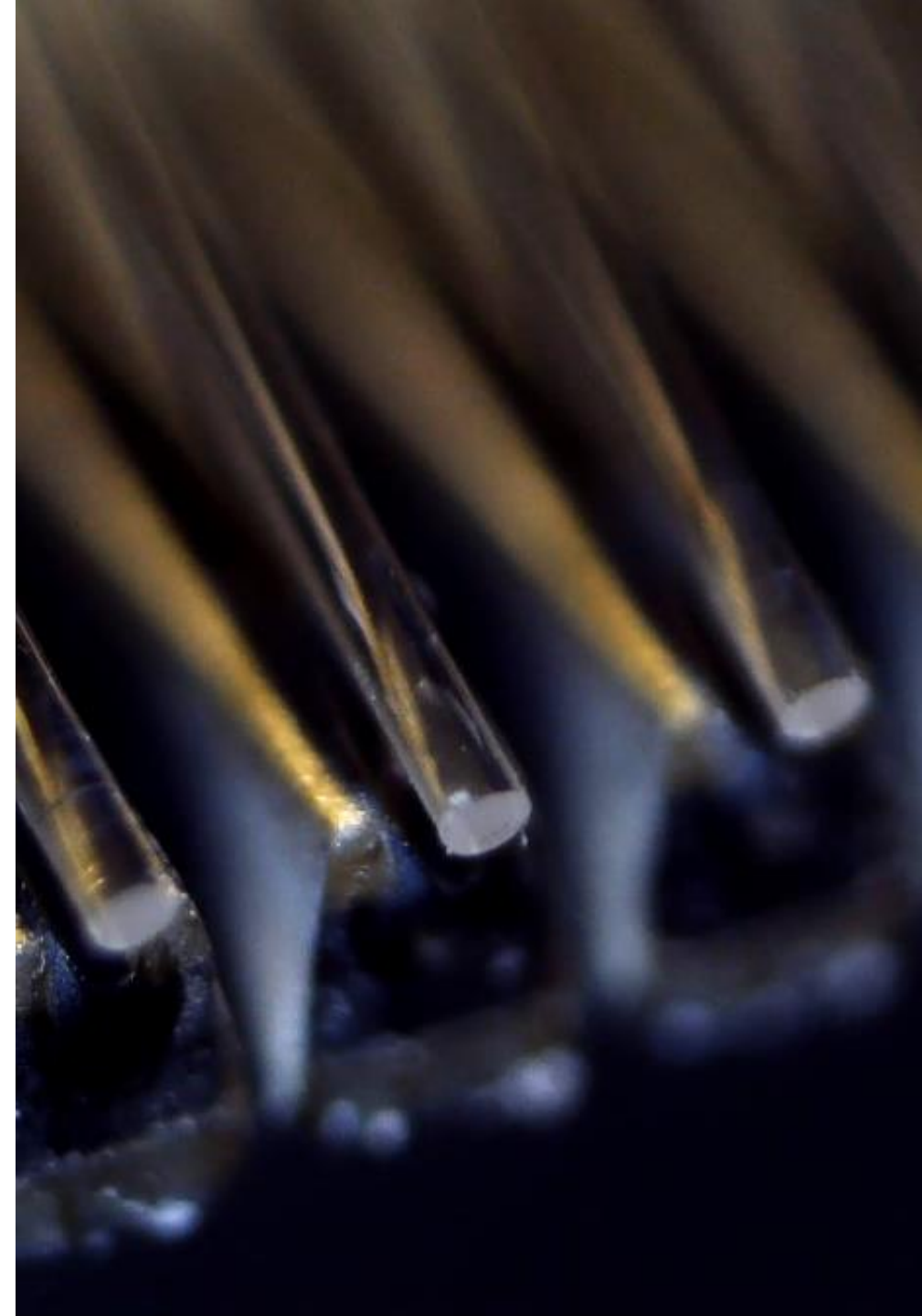




“Core-based fiber array alignment for high energy efficiency fiber array-to-chip coupling”

Simone Cardarelli



The MicroAlign history and team

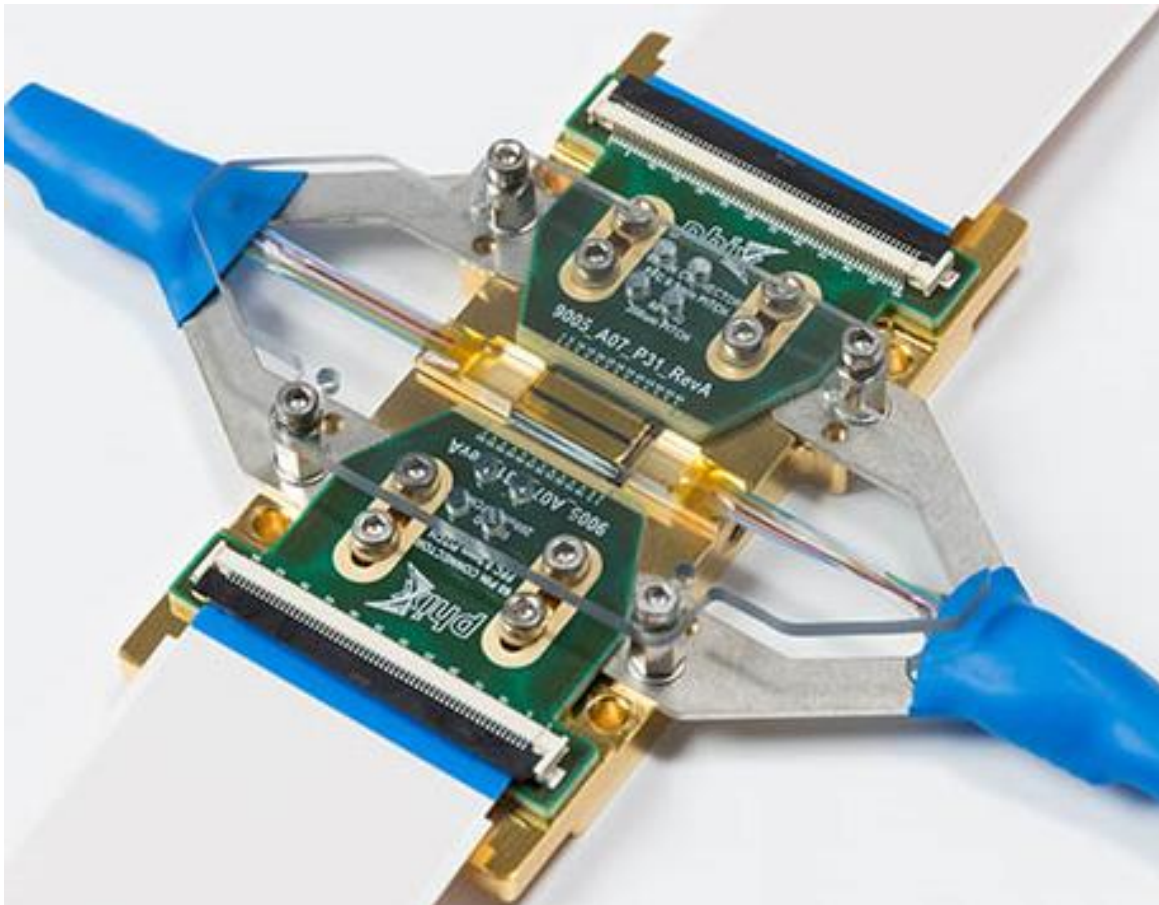


- Founded in April 2021
- A spin-off of the **Eindhoven** University of Technology
- Located on the University campus

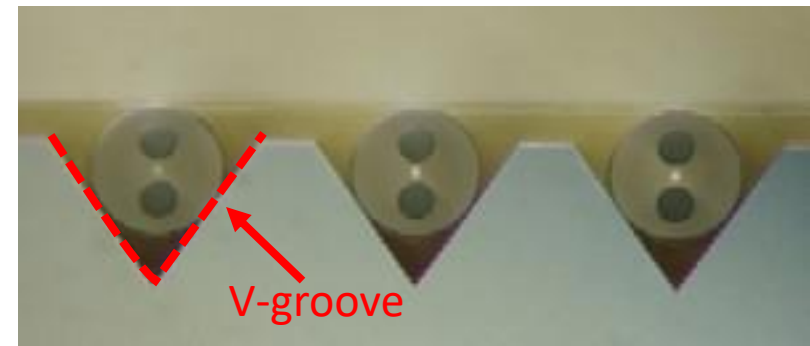
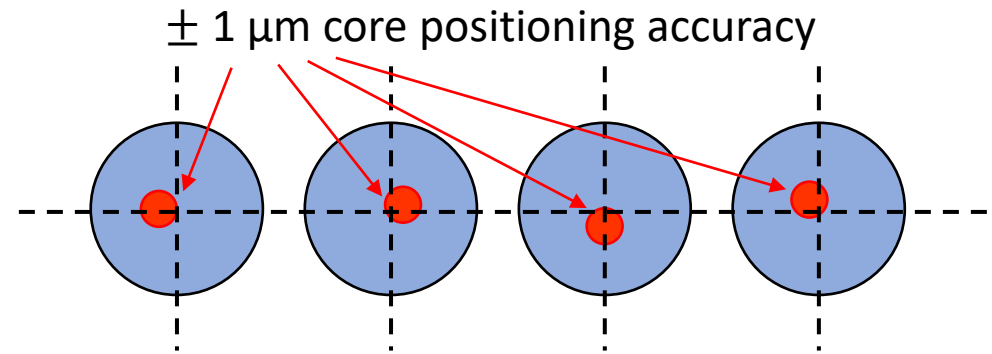


Bottleneck in fiber array alignment

Optical fibers need to be positioned with $< 0.1 \mu\text{m}$ accuracy.

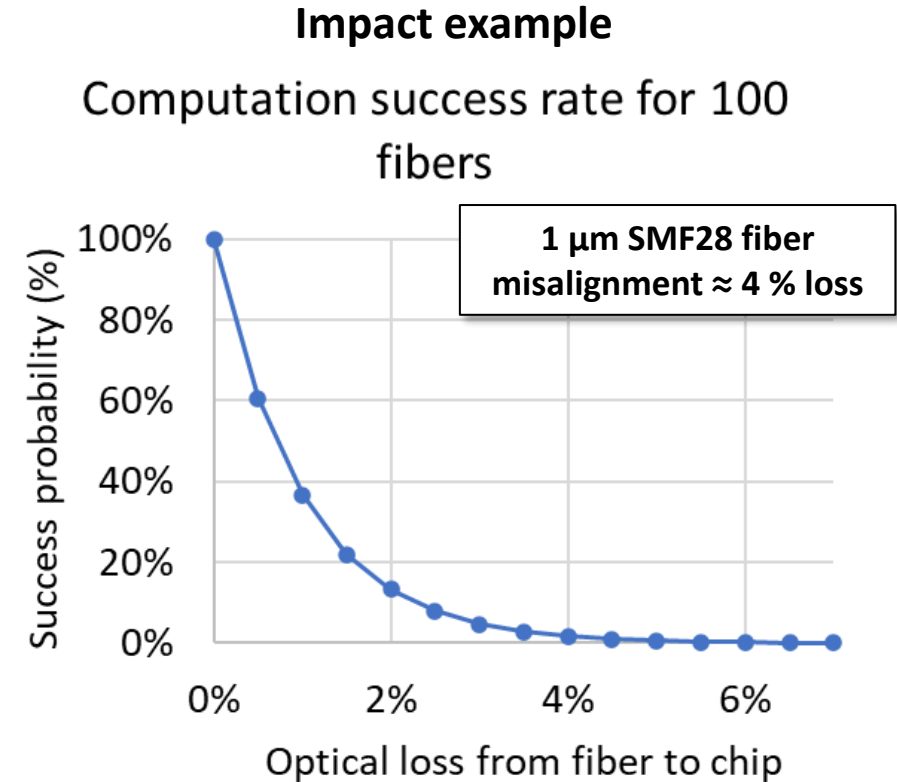
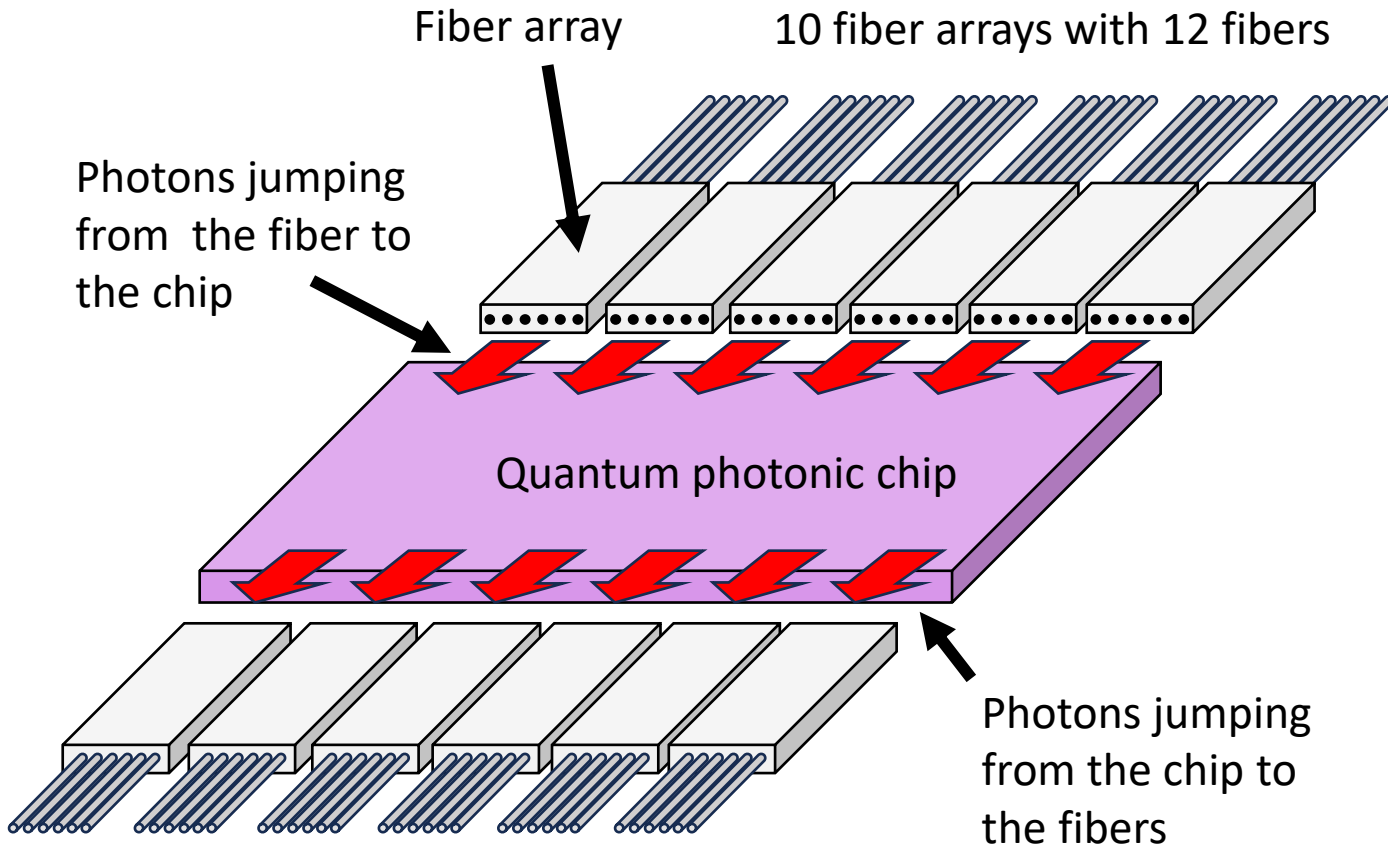


Fabrication accuracy does not meet sub-micron alignment requirements



Source <http://www.phix.com>

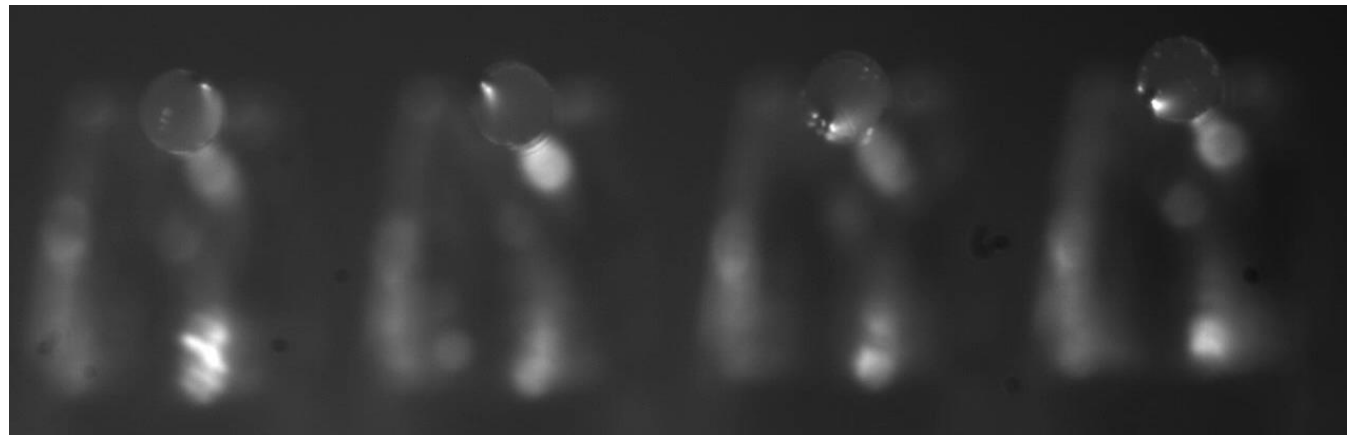
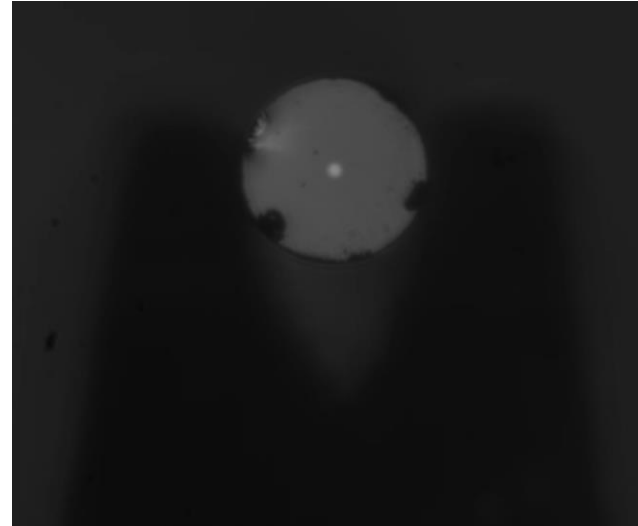
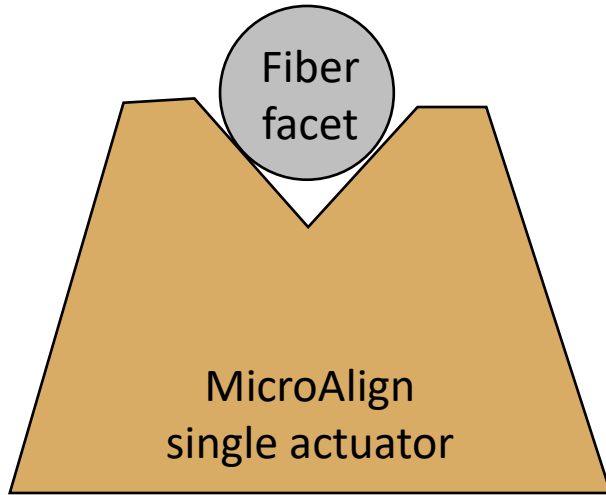
A key problem for photonic Quantum photonic computers



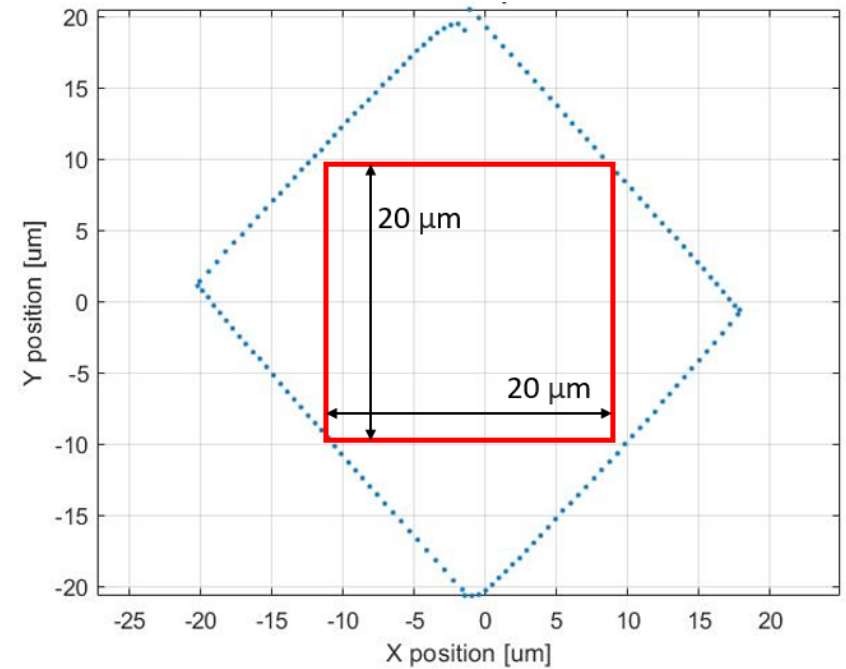
The industry needs: **< 0,1 μm fiber array accuracy → < 0,1 % misalignment loss**

Individual core-based alignment

Front view single actuator



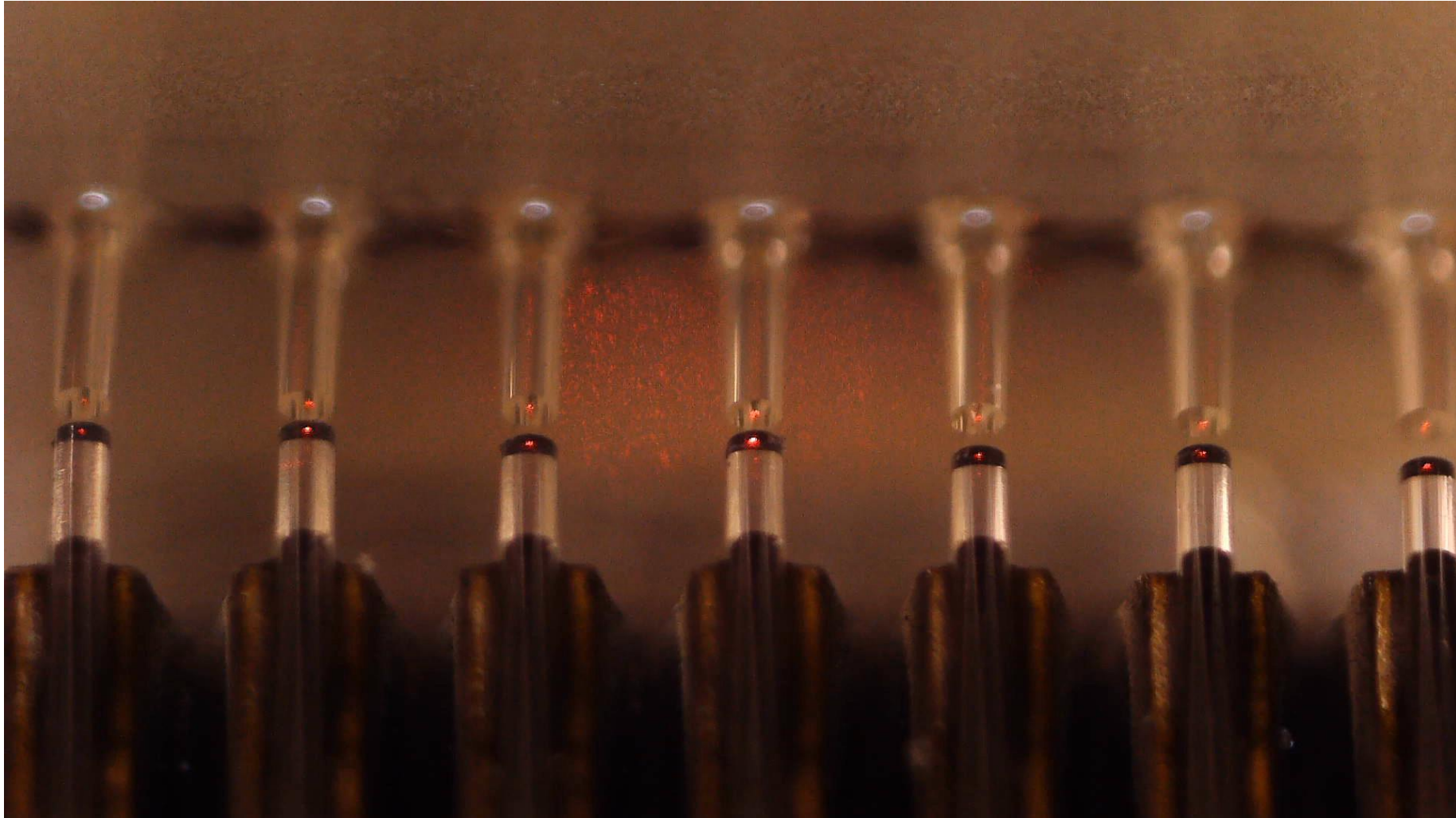
Measured typical tuning range per fiber



Performance indicators

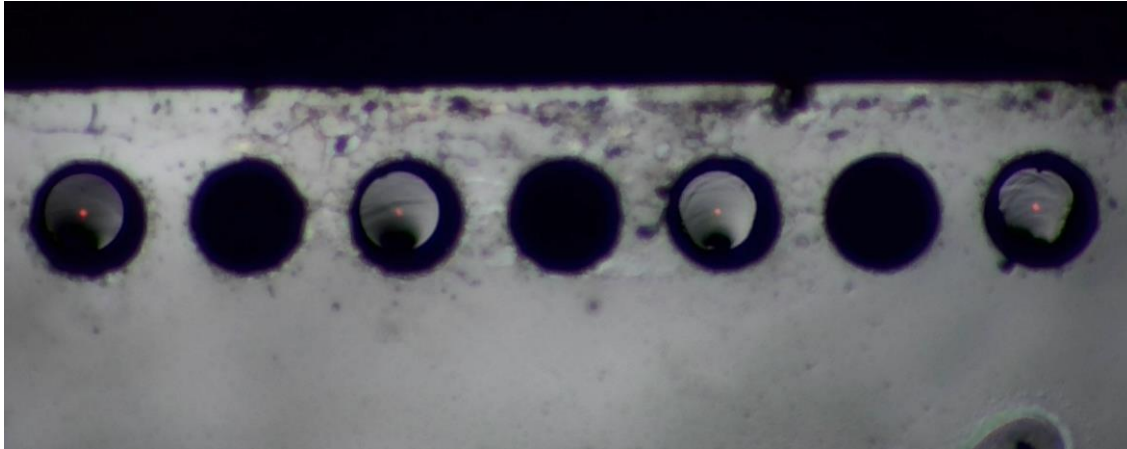
- Vertical displacement 20 μm
- Horizontal displacement 20 μm
- Minimum step < 20 nm

Per fiber-based active alignment

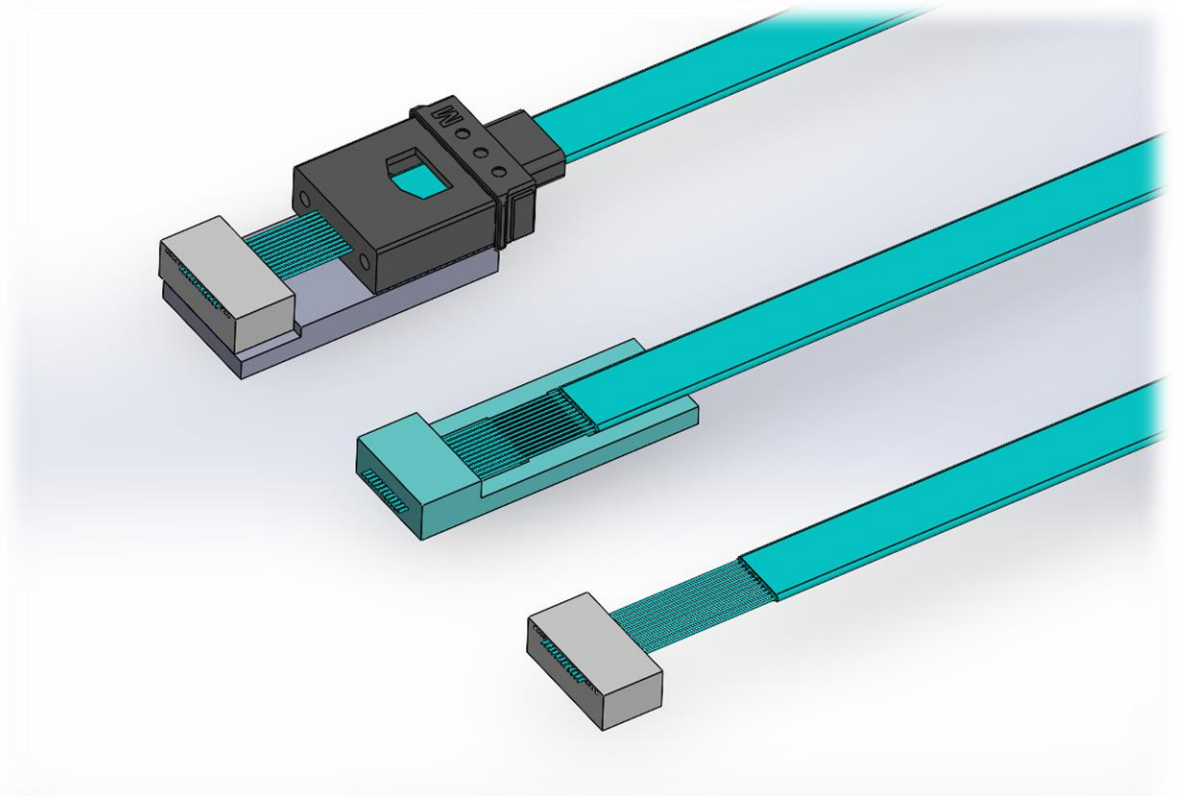


High accuracy fiber arrays

Fiber displaced in the ferrule



Fiber array development concepts



The development roadmap for 2024-2025

- 250 μm pitch 12f-fiber array, pitch accuracy $\pm 0.1 \mu\text{m}$
- 250 μm pitch 24f-fiber array, pitch accuracy $\pm 0.05 \mu\text{m}$
- 127 μm pitch 24f-fiber array, pitch accuracy $\pm 0.05 \mu\text{m}$

Call for action!

If you ...

- Have specific requirements or challenges we can help you with...
- Have questions on our technology development...
- Want to try our first fiber array samples...
- Want to cooperate in projects...

Do not hesitate to get in touch!

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LinkedIn page: <https://www.linkedin.com/company/microalign/>