Ki3 PHOTONICS
Technologies

Ki3 PHASE.FIX

PRISM AWARDS FINALIST

Ultra-Stable Fiber Interferometer

The **Ki3 PHASE.FIX** is a high-precision instrument designed to analyze and stabilize photonic signals in quantum networks. With our low-loss fiber-based interferometer, users can precisely set and stabilize the phase of light, making it essential for quantum cryptography and advanced optical sensing.

This turn-key optical tool works by interfering light with itself, leveraging both passive and active stabilization techniques to ensure exceptional phase stability with minimal user intervention. The interferometer is fully configurable to meet customer specifications, with the flexibility to be reconfigured as needed.

Multiple units can be synchronized to a common reference signal, enabling consistent phase definitions between state preparation and analysis stages. The reference scheme supports both continuous-wave and pulsed modes, facilitating precise timing synchronization in quantum networks. The system communicates via Ethernet and can be controlled and monitored through the Ki3 Photonics Python API.

Features and benefits:

- Maintain phase stability with a self-stabilizing system – Ensures long-term reliability.
- Achieve precise, user-controlled phase tuning – Maintains accuracy across the full phase range.
- Integrate seamlessly with telecom networks – Low-loss fiber design for easy deployment.
- Enable high-visibility quantum interference – Over 95% visibility for reliable measurements.
- Ensure interoperability with open standards – Easy to use and adaptable for diverse applications.
- Scale efficiently with a compact design – Optimized for quantum networking and future scalability.

Questions and quote requests:
info@ki3photonics.com
ki3photonics.com

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Specification	Value[a]
Arm imbalance	0.1 - 50.0 ns
Phase stability[b]	< 1 mrad
Wavelength band[c]	C, S, and L band
Interferometer topology	Michelson/Mach-Zehnder
Optical loss[d]	<5 dB
Output fiber type	SMF-28 or PMF, FC/APC
Temperature monitoring	Yes
Footprint	2U rack mount (19″×3.5″×13″)

a. Custom specification available, please contact info@ki3photonics.com.
b. Stability measured as the Allan deviation of the in-loop reconstructed phase value.
c. External reference laser can be included or provided separately. Custom reference laser wavelengths available.
d. Includes coupling loss, measured at maximal constructive interference.

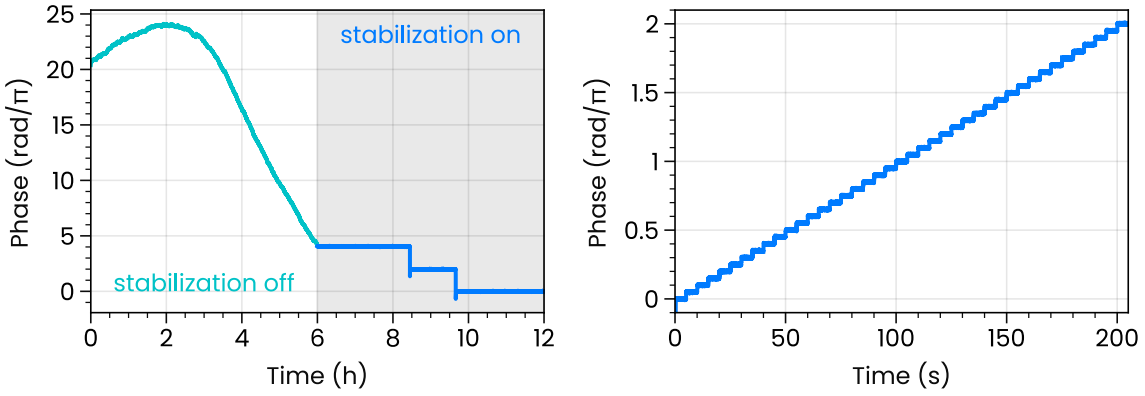

Fig. 1: (a) Long-term phase reconstruction of the Ki3 PHASE.FIX interferometer system, with active stabilization disabled (left) and enabled (right). **(b)** Incrementing the interferometer phase in step sizes of 0.05π.

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