



Physical Research Laboratory, Ahmedabad

ENTANGLED PHOTON SOURCE (EPS) AT 810 nm

Ultra-high brightness

- ✓ 1 MHz/mW pair production rate
- ✓ Highest brightness from a bulk crystal pumped by a continuous-wave laser

High-quality entanglement

- ✓ Bell inequality violation $\approx 10\sigma$
- ✓ Bell-state fidelity ≥ 0.98

Key operational advantages

- ✓ Direct fiber-coupled output
- ✓ Intrinsically phase-stable design
- ✓ Room-temperature operation
- ✓ Reduced system complexity

Applications

- ☐ Free-space quantum key distribution
- ☐ Multi-user quantum networks
- ☐ Quantum entanglement experiments
- ☐ Quantum sensing and metrology
- ☐ Advanced academic training and research laboratories



**JONAKI - entangled photon source,
narrowband at 810 nm**

JONAKI is a compact, field-deployable entangled photon source designed for next-generation quantum communication, quantum sensing, and advanced research applications. Engineered for stability and performance, it generates non-collinear, degenerate polarization-entangled photon pairs at **810 nm**, optimized for free-space and laboratory-based quantum experiments.

JONAKI is built on a precision-engineered **polarization Sagnac interferometer** platform incorporating:

- Single-frequency 405 nm CW diode pump laser
- Type-0 phase-matched bulk PPKTP nonlinear crystal
- Intrinsically phase-stable, common-path configuration
- The symmetric bidirectional pumping scheme ensures ultra-stable phase coherence and long-term alignment stability, making the system ideal for continuous operation in research laboratories and field deployments.

Indigenously developed. Deployment-ready. Scalable for technology transfer.

For technical specifications, demonstrations, or partnership opportunities, please contact us.

Performance Specifications

Parameter	Max.	Typical	Min.	Unit
Signal/Idler degeneracy wavelength	—	810	—	nm
Signal/Idler degeneracy wavelength accuracy	—	±0.5	—	nm
Photon pairs bandwidth FWHM	—	~3	—	nm
Pair-generation rate	—	≥1	—	MHz/mW
Fidelity to $ \Phi\rangle=(HH\rangle- VV\rangle)/\sqrt{2}$	—	>98%	—	
Two-photon interference visibility	—	>90%	—	
Variable output power of pump laser	3	Variable	0	mW
$g^{(2)}(\tau = 0)$	-	0.1		
Extinction ratio		>15		dB
Physical Dimensions	Width x Depth x Height	225 mm x 165 mm x 111 mm		
	Weight (kg)	1.5		

Operating and Storage Conditions

Parameter	Min.	Max.
Operating temperature	18°C	28°C
Operating relative humidity (% RH)	5	60
Storage temperature	-10°C	60°C
Storage relative humidity (% RH)	0	90

Image of the test setup at Photonic Sciences Lab. at
Physical Research Laboratory, Ahmedabad

