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Global Optical Quantum Computing Core Market Growth (Status and Outlook) 2026-2032

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Abstracts

The global Optical Quantum Computing Core market size is predicted to grow from US$ 709 million in 2025 to US$ 2620 million in 2032; it is expected to grow at a CAGR of 20.7% from 2026 to 2032.

The core of optical quantum computing lies in using photons as the carriers of qubits and leveraging quantum interference and quantum entanglement to programmably manipulate optical field states. Specifically, its computational nature is not a simple 'switch' logic flip, but rather the generation of deterministic quantum states through a highly coherent single-photon source. In a low-loss integrated optical path, beam splitting, phase modulation, and nonlinear or measurement-induced mechanisms are used to achieve the interferometric evolution of multi-photon states in Hilbert space, ultimately completing the measurement readout through high-efficiency single-photon detection. The true technological core of optical quantum computing lies in three key aspects: high-quality single-photon sources, ultra-low-loss scalable photonic circuits, and high-fidelity entanglement and interference control capabilities. These factors collectively determine the system's scalability, computational accuracy, and commercial viability.

This report presents a comprehensive overview, market shares, and growth opportunities of Optical Quantum Computing Core market by product type, application, key players and key regions and countries.

Segmentation by Type:

Continuous-Variable Photonic Quantum Computing

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Discrete-Variable / Single-Photon Quantum Computing

Segmentation by Position In the Value Chain:

Photonic Quantum Computer System Providers

Photonic Quantum Chip / Processor Developers

Segmentation by Application Focus:

Universal Quantum Computing

Quantum Communication & Security

Research & Industrial Prototyping

Segmentation by Application:

Photonic Quantum Computing

Photonic Quantum Simulation

Quantum Cloud Platform

This report also splits the market by region:

United States

China%li%

Europe

Other regions

Japan

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South Korea

Southeast Asia

Rest of world

The report also presents the market competition landscape and a corresponding detailed analysis of the major players in the market. The key players covered in this report:

Xanadu

PsiQuantum

TuringQ Co.,Ltd.

Hefei Guizhen Chip Technology Co., Ltd.

Beijing QBoson Quantum Technology Co.,Ltd.

QuiX Quantum

Quandela

Photonic

CHIPX

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Contents

1 SCOPE OF THE REPORT

1.1 Market Introduction
1.2 Years Considered
1.3 Research Objectives
1.4 Market Research Methodology
1.5 Research Process and Data Source
1.6 Economic Indicators
1.7 Currency Considered

2 EXECUTIVE SUMMARY

2.1 World Market Overview
  2.1.1 Global Optical Quantum Computing Core Market Size 2026-2032
  2.1.2 Optical Quantum Computing Core Market Size CAGR by Region
2.2 Optical Quantum Computing Core Segment by Type
  2.2.1 Continuous-Variable Photonic Quantum Computing
  2.2.2 Discrete-Variable / Single-Photon Quantum Computing
  2.2.3 Optical Quantum Computing Core Market Size by Type
    2.2.3.1 Global Optical Quantum Computing Core Market Size Market Share by Type (2026-2032)
    2.2.3.2 Global Optical Quantum Computing Core Market Size Growth Rate by Type (2026-2032)
2.3 Optical Quantum Computing Core Segment by Position In the Value Chain
  2.3.1 Photonic Quantum Computer System Providers
  2.3.2 Photonic Quantum Chip / Processor Developers
  2.3.3 Optical Quantum Computing Core Market Size by Position In the Value Chain
    2.3.3.1 Global Optical Quantum Computing Core Market Size Market Share by Position In the Value Chain (2026-2032)
    2.3.3.2 Global Optical Quantum Computing Core Market Size Growth Rate by Position In the Value Chain (2026-2032)
2.4 Optical Quantum Computing Core Segment by Application Focus
  2.4.1 Universal Quantum Computing
  2.4.2 Quantum Communication & Security
  2.4.3 Research & Industrial Prototyping
  2.4.4 Optical Quantum Computing Core Market Size by Application Focus
    2.4.4.1 Global Optical Quantum Computing Core Market Size Market Share by

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Application Focus (2026-2032)
2.4.4.2 Global Optical Quantum Computing Core Market Size Growth Rate by Application Focus (2026-2032)
2.5 Optical Quantum Computing Core Segment by Application
2.5.1 Photonic Quantum Computing
2.5.2 Photonic Quantum Simulation
2.5.3 Quantum Cloud Platform
2.5.4 Optical Quantum Computing Core Market Size by Application (2026-2032)
2.5.4.1 Global Optical Quantum Computing Core Market Size Market Share by Application (2026-2032)
2.5.4.2 Global Optical Quantum Computing Core Market Size Growth Rate by Application (2026-2032)

3 OPTICAL QUANTUM COMPUTING CORE KEY PLAYERS

3.1 Date of Key Players Enter into Optical Quantum Computing Core
3.2 Key Players Optical Quantum Computing Core Product Offered
3.3 Key Players Optical Quantum Computing Core Funding/Investment Analysis
3.4 Funding/Investment
3.4.1 Funding/Investment by Regions
3.4.2 Funding/Investment by End-Industry
3.5 Key Players Optical Quantum Computing Core Valuation & Market Capitalization
3.6 Key Players Mergers & Acquisitions, Expansion Plans
3.7 Market Ranking
3.8 New Product/Technology Launches
3.9 Partnerships, Agreements, and Collaborations
3.10 Mergers and Acquisitions

4 OPTICAL QUANTUM COMPUTING CORE BY REGIONS

4.1 Optical Quantum Computing Core Market Size by Regions (2026-2032)
4.2 United States Optical Quantum Computing Core Market Size Growth (2026-2032)
4.3 China Optical Quantum Computing Core Market Size Growth (2026-2032)
4.4 Europe Optical Quantum Computing Core Market Size Growth (2026-2032)
4.5 Rest of World Optical Quantum Computing Core Market Size Growth (2026-2032)

5 UNITED STATES

5.1 United States Optical Quantum Computing Core Market Size by Type (2026-2032)

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5.2 United States Optical Quantum Computing Core Market Size by Application (2026-2032)

6 EUROPE

6.1 Europe Optical Quantum Computing Core Market Size by Type (2026-2032)
6.2 Europe Optical Quantum Computing Core Market Size by Application (2026-2032)

7 CHINA

7.1 China Optical Quantum Computing Core Market Size by Type (2026-2032)
7.2 China Optical Quantum Computing Core Market Size by Application (2026-2032)

8 REST OF WORLD

8.1 Rest of World Optical Quantum Computing Core Market Size by Type (2026-2032)
8.2 Rest of World Optical Quantum Computing Core Market Size by Application (2026-2032)
8.3 Japan
8.4 South Korea
8.5 Southeast Asia

9 MARKET DRIVERS, CHALLENGES AND TRENDS

9.1 Market Drivers & Growth Opportunities
9.2 Market Challenges & Risks
9.3 Industry Trends

10 KEY INVESTORS IN OPTICAL QUANTUM COMPUTING CORE

10.1 Company A
  10.1.1 Company A Company Details
  10.1.2 Company Description
  10.1.3 Companies Invested by Company A
  10.1.4 Company A Key Development and Market Layout
10.2 Company B
  10.2.1 Company B Company Details
  10.2.2 Company Description
  10.2.3 Companies Invested by Company B

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10.2.4 Company B Key Development and Market Layout
10.3 Company C
10.3.1 Company C Company Details
10.3.2 Company Description
10.3.3 Companies Invested by Company C
10.3.4 Company C Key Development and Market Layout
10.4 Company D
10.5 ……

11 KEY PLAYERS ANALYSIS

11.1 Xanadu
11.1.1 Xanadu Company Details
11.1.2 Xanadu Optical Quantum Computing Core Product Offered
11.1.3 Xanadu Optical Quantum Computing Core Market Size (2025 VS 2031)
11.1.4 Xanadu Main Business Overview
11.1.5 Xanadu News
11.2 PsiQuantum
11.2.1 PsiQuantum Company Details
11.2.2 PsiQuantum Optical Quantum Computing Core Product Offered
11.2.3 PsiQuantum Optical Quantum Computing Core Market Size (2025 VS 2031)
11.2.4 PsiQuantum Main Business Overview
11.2.5 PsiQuantum News
11.3 TuringQ Co.,Ltd.
11.3.1 TuringQ Co.,Ltd. Company Details
11.3.2 TuringQ Co.,Ltd. Optical Quantum Computing Core Product Offered
11.3.3 TuringQ Co.,Ltd. Optical Quantum Computing Core Market Size (2025 VS 2031)
11.3.4 TuringQ Co.,Ltd. Main Business Overview
11.3.5 TuringQ Co.,Ltd. News
11.4 Hefei Guizhen Chip Technology Co., Ltd.
11.4.1 Hefei Guizhen Chip Technology Co., Ltd. Company Details
11.4.2 Hefei Guizhen Chip Technology Co., Ltd. Optical Quantum Computing Core Product Offered
11.4.3 Hefei Guizhen Chip Technology Co., Ltd. Optical Quantum Computing Core Market Size (2025 VS 2031)
11.4.4 Hefei Guizhen Chip Technology Co., Ltd. Main Business Overview
11.4.5 Hefei Guizhen Chip Technology Co., Ltd. News
11.5 Beijing QBoson Quantum Technology Co.,Ltd.

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11.5.1 Beijing QBoson Quantum Technology Co.,Ltd. Company Details
11.5.2 Beijing QBoson Quantum Technology Co.,Ltd. Optical Quantum Computing Core Product Offered
11.5.3 Beijing QBoson Quantum Technology Co.,Ltd. Optical Quantum Computing Core Market Size (2025 VS 2031)
11.5.4 Beijing QBoson Quantum Technology Co.,Ltd. Main Business Overview
11.5.5 Beijing QBoson Quantum Technology Co.,Ltd. News
11.6 QuiX Quantum
11.6.1 QuiX Quantum Company Details
11.6.2 QuiX Quantum Optical Quantum Computing Core Product Offered
11.6.3 QuiX Quantum Optical Quantum Computing Core Market Size (2025 VS 2031)
11.6.4 QuiX Quantum Main Business Overview
11.6.5 QuiX Quantum News
11.7 Quandela
11.7.1 Quandela Company Details
11.7.2 Quandela Optical Quantum Computing Core Product Offered
11.7.3 Quandela Optical Quantum Computing Core Market Size (2025 VS 2031)
11.7.4 Quandela Main Business Overview
11.7.5 Quandela News
11.8 Photonic
11.8.1 Photonic Company Details
11.8.2 Photonic Optical Quantum Computing Core Product Offered
11.8.3 Photonic Optical Quantum Computing Core Market Size (2025 VS 2031)
11.8.4 Photonic Main Business Overview
11.8.5 Photonic News
11.9 CHIPX
11.9.1 CHIPX Company Details
11.9.2 CHIPX Optical Quantum Computing Core Product Offered
11.9.3 CHIPX Optical Quantum Computing Core Market Size (2025 VS 2031)
11.9.4 CHIPX Main Business Overview
11.9.5 CHIPX News

12 RESEARCH FINDINGS AND CONCLUSION

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List Of Tables

LIST OF TABLES

Table 1. Optical Quantum Computing Core Market Size CAGR by Region (2026-2032) ($ millions)
Table 2. Major Players of Continuous-Variable Photonic Quantum Computing
Table 3. Major Players of Discrete-Variable / Single-Photon Quantum Computing
Table 4. Global Market Size by Type (2026-2032) ($ millions)
Table 5. Global Optical Quantum Computing Core Market Size Market Share by Type (2026-2032)
Table 6. Major Players of Photonic Quantum Computer System Providers
Table 7. Major Players of Photonic Quantum Chip / Processor Developers
Table 8. Global Market Size by Position In the Value Chain (2026-2032) ($ millions)
Table 9. Global Optical Quantum Computing Core Market Size Market Share by Position In the Value Chain (2026-2032)
Table 10. Major Players of Universal Quantum Computing
Table 11. Major Players of Quantum Communication & Security
Table 12. Major Players of Research & Industrial Prototyping
Table 13. Global Market Size by Application Focus (2026-2032) ($ millions)
Table 14. Global Optical Quantum Computing Core Market Size Market Share by Application Focus (2026-2032)
Table 15. Global Optical Quantum Computing Core Market Size by Application (2026-2032) ($ millions)
Table 16. Global Optical Quantum Computing Core Market Size Market Share by Application (2026-2032)
Table 17. Date of Global Key Players Enter into Optical Quantum Computing Core Market
Table 18. Global Key Players Optical Quantum Computing Core Product Offered
Table 19. Key Players Optical Quantum Computing Core Funding/Investment (Million USD)
Table 20. Funding/Investment by Regions
Table 21. Funding/Investment by End-Industry
Table 22. Key Players Optical Quantum Computing Core Valuation & Market Capitalization (Million USD)
Table 23. Key Players Mergers & Acquisitions, Expansion Plans
Table 24. Optical Quantum Computing Core New Product/Technology Launches
Table 25. Optical Quantum Computing Core Industry Partnerships, Agreements, and Collaborations

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Table 26. Optical Quantum Computing Core Industry Mergers and Acquisitions
Table 27. Global Optical Quantum Computing Core Market Size by Regions 2026-2032 ($ millions)
Table 28. Global Optical Quantum Computing Core Market Size Market Share by Regions 2026-2032
Table 29. United States Optical Quantum Computing Core Market Size by Type (2026-2032) ($ millions)
Table 30. United States Optical Quantum Computing Core Market Size Market Share by Type (2026-2032)
Table 31. United States Optical Quantum Computing Core Market Size by Application (2026-2032) ($ millions)
Table 32. United States Optical Quantum Computing Core Market Size Market Share by Application (2026-2032)
Table 33. Europe Optical Quantum Computing Core Market Size by Type (2026-2032) ($ millions)
Table 34. Europe Optical Quantum Computing Core Market Size Market Share by Type (2026-2032)
Table 35. Europe Optical Quantum Computing Core Market Size by Application (2026-2032) ($ millions)
Table 36. Europe Optical Quantum Computing Core Market Size Market Share by Application (2026-2032)
Table 37. China Optical Quantum Computing Core Market Size by Type (2026-2032) ($ millions)
Table 38. China Optical Quantum Computing Core Market Size Market Share by Type (2026-2032)
Table 39. China Optical Quantum Computing Core Market Size by Application (2026-2032) ($ millions)
Table 40. China Optical Quantum Computing Core Market Size Market Share by Application (2026-2032)
Table 41. Rest of World Optical Quantum Computing Core Market Size by Type (2026-2032) ($ millions)
Table 42. Rest of World Optical Quantum Computing Core Market Size Market Share by Type (2026-2032)
Table 43. Rest of World Optical Quantum Computing Core Market Size by Application (2026-2032) ($ millions)
Table 44. Rest of World Optical Quantum Computing Core Market Size Market Share by Application (2026-2032)
Table 45. Key Market Drivers & Growth Opportunities of Optical Quantum Computing Core

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Table 46. Key Market Challenges & Risks of Optical Quantum Computing Core
Table 47. Key Industry Trends of Optical Quantum Computing Core
Table 48. Company A Company Details
Table 49. Companies Invested by Company A
Table 50. Company A Key Development and Market Layout
Table 51. Company B Company Details
Table 52. Companies Invested by Company B
Table 53. Company B Key Development and Market Layout
Table 54. Company C Company Details
Table 55. Companies Invested by Company C
Table 56. Company C Key Development and Market Layout
Table 57. Xanadu Basic Information, Head Office, Major Market Areas and Its Competitors
Table 58. Xanadu Optical Quantum Computing Core Market Size (2025 VS 2031)
Table 59. PsiQuantum Basic Information, Head Office, Major Market Areas and Its Competitors
Table 60. PsiQuantum Optical Quantum Computing Core Market Size (2025 VS 2031)
Table 61. TuringQ Co.,Ltd. Basic Information, Head Office, Major Market Areas and Its Competitors
Table 62. TuringQ Co.,Ltd. Optical Quantum Computing Core Market Size (2025 VS 2031)
Table 63. Hefei Guizhen Chip Technology Co., Ltd. Basic Information, Head Office, Major Market Areas and Its Competitors
Table 64. Hefei Guizhen Chip Technology Co., Ltd. Optical Quantum Computing Core Market Size (2025 VS 2031)
Table 65. Beijing QBoson Quantum Technology Co.,Ltd. Basic Information, Head Office, Major Market Areas and Its Competitors
Table 66. Beijing QBoson Quantum Technology Co.,Ltd. Optical Quantum Computing Core Market Size (2025 VS 2031)
Table 67. QuiX Quantum Basic Information, Head Office, Major Market Areas and Its Competitors
Table 68. QuiX Quantum Optical Quantum Computing Core Market Size (2025 VS 2031)
Table 69. Quandela Basic Information, Head Office, Major Market Areas and Its Competitors
Table 70. Quandela Optical Quantum Computing Core Market Size (2025 VS 2031)
Table 71. Photonic Basic Information, Head Office, Major Market Areas and Its Competitors
Table 72. Photonic Optical Quantum Computing Core Market Size (2025 VS 2031)

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Table 73. CHIPX Basic Information, Head Office, Major Market Areas and Its Competitors
Table 74. CHIPX Optical Quantum Computing Core Market Size (2025 VS 2031)

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List Of Figures

LIST OF FIGURES

Figure 1. Picture of Optical Quantum Computing Core
Figure 2. Optical Quantum Computing Core Report Years Considered
Figure 3. Research Objectives
Figure 4. Research Methodology
Figure 5. Research Process and Data Source
Figure 6. Global Optical Quantum Computing Core Market Size Growth Rate 2026-2032 ($ millions)
Figure 7. Optical Quantum Computing Core Market Size by Region (2025 & 2032) ($ millions)
Figure 8. Global Optical Quantum Computing Core Market Size Market Share by Type (2026-2032)
Figure 9. Global Continuous-Variable Photonic Quantum Computing Market Size Growth Rate
Figure 10. Global Discrete-Variable / Single-Photon Quantum Computing Market Size Growth Rate
Figure 11. Global Optical Quantum Computing Core Market Size Market Share by Position In the Value Chain (2026-2032)
Figure 12. Global Photonic Quantum Computer System Providers Market Size Growth Rate
Figure 13. Global Photonic Quantum Chip / Processor Developers Market Size Growth Rate
Figure 14. Global Optical Quantum Computing Core Market Size Market Share by Application Focus (2026-2032)
Figure 15. Global Universal Quantum Computing Market Size Growth Rate
Figure 16. Global Quantum Communication & Security Market Size Growth Rate
Figure 17. Optical Quantum Computing Core in Photonic Quantum Computing
Figure 18. Global Optical Quantum Computing Core Market: Photonic Quantum Computing (2026-2032) ($ millions)
Figure 19. Optical Quantum Computing Core in Photonic Quantum Simulation
Figure 20. Global Optical Quantum Computing Core Market: Photonic Quantum Simulation (2026-2032) ($ millions)
Figure 21. Optical Quantum Computing Core in Quantum Cloud Platform
Figure 22. Global Optical Quantum Computing Core Market: Quantum Cloud Platform (2026-2032) ($ millions)
Figure 23. Global Optical Quantum Computing Core Market Size Market Share by

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Application (2026-2032)
Figure 24. Global Optical Quantum Computing Core Market Size in Photonic Quantum Computing Growth Rate
Figure 25. Global Optical Quantum Computing Core Market Size in Photonic Quantum Simulation Growth Rate
Figure 26. Funding/Investment
Figure 27. Global Optical Quantum Computing Core Market Size Market Share by Regions 2026-2032
Figure 28. United States Optical Quantum Computing Core Market Size 2026-2032 ($ millions)
Figure 29. China Optical Quantum Computing Core Market Size 2026-2032 ($ millions)
Figure 30. Europe Optical Quantum Computing Core Market Size 2026-2032 ($ millions)
Figure 31. Rest of World Optical Quantum Computing Core Market Size 2026-2032 ($ millions)
Figure 32. United States Optical Quantum Computing Core Consumption Market Share by Type in 2030
Figure 33. United States Optical Quantum Computing Core Market Size Market Share by Application in 2030
Figure 34. Europe Optical Quantum Computing Core Consumption Market Share by Type in 2030
Figure 35. Europe Optical Quantum Computing Core Market Size Market Share by Application in 2030
Figure 36. China Optical Quantum Computing Core Consumption Market Share by Type in 2030
Figure 37. China Optical Quantum Computing Core Market Size Market Share by Application in 2030
Figure 38. Rest of World Optical Quantum Computing Core Consumption Market Share by Type in 2030
Figure 39. Rest of World Optical Quantum Computing Core Market Size Market Share by Application in 2030

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