

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT6609099

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
THE GOVERNING COUNCIL OF THE UNIVERSITY OF TORONTO	08/02/2018

RECEIVING PARTY DATA

Name:	XANADU QUANTUM TECHNOLOGIES INC.
Street Address:	777 BAY STREET, SUITE 2902
City:	TORONTO
State/Country:	CANADA
Postal Code:	M5G 2C8

PROPERTY NUMBERS Total: 2

Property Type	Number
Application Number:	17108221
PCT Number:	CA2019050899

CORRESPONDENCE DATA

Fax Number: (202)842-7899

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 2028427800

Email: jbegley@cooley.com

Correspondent Name: COOLEY LLP

Address Line 1: 1299 PENNSYLVANIA AVENUE NW

Address Line 2: PATENT GROUP

Address Line 4: WASHINGTON, D.C. 20004-2400

ATTORNEY DOCKET NUMBER:	XQTI-007/01US 331150-2041
NAME OF SUBMITTER:	LESLY MCANELLY
SIGNATURE:	/Lesly A. McAnelly/
DATE SIGNED:	03/18/2021

Total Attachments: 23

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ASSIGNMENT OF RIGHTS AGREEMENT

THIS ASSIGNMENT OF RIGHTS AGREEMENT ("**Agreement**"), made effective as of June 29, 2018 (the "**Effective Date**"), is made by and between:

THE GOVERNING COUNCIL OF THE UNIVERSITY OF TORONTO, a corporation vested with the government, management and control of the University of Toronto by the *University of Toronto Act, 1971*, with offices located at the Banting Institute, 100 College Street, Suite 413, Toronto, ON M5G 1L5, Canada (the "**University of Toronto**", "**University**" or "**Assignor**");

- and -

XANADU QUANTUM TECHNOLOGIES INC., a Canadian corporation with offices located at 372 Richmond Street W., Toronto, ON M5V 1X6, Canada ("**Xanadu**" or "**Assignee**").

WHEREAS John E Sipe, a Professor from the Department of Physics at the University of Toronto, while employed by the University of Toronto, and Marco Liscidini, a Visiting Professor from the University of Pavia, at the Impact Centre within the University (individually a "**University Inventor**", collectively, "**University Inventors**"), in collaboration with certain co-inventors from Xanadu, Zachary Vernon, Kang Tan, Blair Morrison, and Matteo Menotti (collectively "**Xanadu Inventors**") created certain intellectual property entitled "*Systems and methods for nonlinear optical light generation using linearly uncoupled resonators in integrated photonic devices*" more fully set forth under Confidential Invention Disclosure 10003605 dated July 5, 2018 submitted to the University by University Inventors in accordance with University Policy and further appended hereto as Schedule "A" (the "**Invention**"); and

WHEREAS as a Visiting Professor at the University, Marco Liscidini's research and teaching activities are governed by the Policies & Procedures of the University; and

WHEREAS under the University's *Inventions Policy* (the "**Policy**", including any successor policy thereto), the University and the University Inventors jointly own their contribution to the Invention; and

WHEREAS the University and the Assignee were parties to an NSERC Engage-partnered OCE VIP I funded research project, the terms and conditions of which mandate that any Intellectual Property (IP) arising from the Project be assigned to the Assignee and that any exploitation of IP benefit Canada; and

WHEREAS as a condition of the terms and conditions of both the NSERC Engage Award [EGP 521286-17] and the Intellectual Term Sheet appended as Schedule "D" to the OCE Funding Agreement [OCE #29571], the University wishes to assign all of its rights, title and interest in the Invention and Intellectual Property Rights (as further defined below) to the Assignee; and

WHEREAS to establish a clear chain of title to the Invention and facilitate this assignment of rights and title to the Assignee by the University, as mandated under the NSERC-Engage program and the mutually agreed to IP Terms in the OCE Funding Agreement signed between the Parties, the University Inventors have each assigned their rights, title and interest in the Assigned Assets (as hereinafter defined) to the University via a separate internal agreement dated August 2, 2018 ("**Inventors' Assignment**"), a copy of which is appended hereto as Schedule "B";

NOW THEREFORE in consideration of the premises and the mutual covenants, terms, conditions and agreements contained herein, the Parties hereto agree as follows:

1. Definitions

The following terms have the following meanings in this Agreement:

- (a) "**Assigned Assets**" means the Invention and related Intellectual Property Rights;
- (b) "**Confidential Information**" means the specific terms and conditions set forth in this Agreement, the know-how, and any information, which is non-public, confidential or proprietary in nature, including, without limitation, business information, trade secrets, and any information related to the Patents or Intellectual Property Rights, whether written, oral or in electronic form, but shall not include information that:
- (i) is or becomes generally available to the public other than as a result of any act by a receiving Party to this Agreement;
 - (ii) is rightfully received from a third party without similar restriction or without breach of this Agreement;
 - (iii) a receiving Party able to demonstrate, in writing, was known to it on a non-confidential basis; or
 - (iv) was independently developed by a receiving Party without the use of any of the Confidential Information.
- (c) "**Intellectual Property Rights**" means all Patents, copyrights, trade names and other intellectual property rights, whether registered or not, owned by or licensed to the Assignor related to the Invention and further set forth under Schedule "C";

- (d) "Invention" has the meaning ascribed to in the first recital but does not include any improvements, enhancements, derivatives or other modifications created by the University or the Inventor after the Effective Date of this Agreement *unless otherwise agreed to by the Parties*;
- (e) "Parties" means the Assignor and Assignee collectively, and "Party" means any one of them;
- (f) "Patents" means the patent application listed in Schedule "C" and includes applications that have or may be filed for patents in Canada, the United States of America or any other country or region or under the Patent Cooperation Treaty based on the foregoing patent application, divisions, continuations, continuations-in-part, re-examination or renewals based directly or indirectly on the foregoing patent application, any patents which may issue on, from or as a result of any of the foregoing, and any reissue of said patents.

2. Assignment of Rights

The Assignor hereby assigns to the Assignee all right, title and interest, whatever the same may be (but without any representation or warranty as to the nature, extent or validity thereof), that the Assignor has or may in the future have worldwide in and to the Assigned Assets, including without limitation the right to apply for patents in every country, the right to receive any letters patent that may issue from any such applications and the right to sell or license the Assigned Assets.

3. License for Non-Commercial Use

Assignee hereby grants to the University a fully-paid, non-exclusive, perpetual, irrevocable, non-transferable, non-sublicensable license to use the Assigned Assets for non-commercial research, educational and administrative purposes without cost.

4. Confidential Information

Each Party shall not: (a) use or disclose Confidential Information received from the other Party for any purpose other than the performance of the obligations hereunder (b) disclose Confidential Information to any third party. Each Party shall take such reasonable measures to maintain the other Party's Confidential Information as confidential as it takes to protect its own proprietary and confidential information, and in any event shall take no less than a reasonable degree of care. Each Party shall be responsible for the imposition of the confidentiality provisions provided for herein upon its own staff, consultants and other advisors prior to disclosing any Confidential Information to such representatives.

5. Disclaimers

Except for the representation and warranty provided herein, the Assigned Assets are assigned to the Assignee by the Assignor on an "as is" basis, and the Assignor disclaims all representations, warranties and conditions of any kind, whether express or implied, statutory or otherwise, including without limitation:

- (a) all representations, warranties and conditions as to the patentability, validity, scope or enforceability of the Assigned Assets;
- (b) all representations, warranties and conditions that any use of the Assigned Assets will be free from infringement of intellectual property rights of any third party; and
- (c) all representations, warranties and conditions as to quality, merchantable quality, merchantability or fitness of the Assigned Assets for any particular purpose.

6. Indemnity

The Assignee shall indemnify and save the Assignor harmless from and against any loss arising out of or pursuant to any claims or demands in connection with the Assigned Assets and all reasonable costs, damages and expenses (including reasonable legal fees) incurred by the Assignor and in connection therewith, except where such claims are caused by the Assignor's use of the Assigned Assets contemplated under Section 3 herein.

7. Release

Save and except for the right to enforce the terms of this Agreement, the Assignor releases the Assignee from any and all claims that the Assignor may now have or may in future have in respect the Assigned Assets.

8. Further Assurances

The Assignor agrees to do all acts necessary and to execute all documents necessary or desirable, at the Assignee's cost and expense, to fulfill the provisions of this Agreement, to give the Assignee the full benefit of this Agreement and to secure and evidence ownership of the Assigned Assets in favour of the Assignee.

9. Miscellaneous

- (a) Titles used in this Agreement are for the purposes of convenience only and shall not be used in the interpretation of this Agreement. The attached schedules form part of this Agreement.
- (b) This Agreement is the entire agreement between the undersigned Parties as to the subject matter hereof, and may only be amended in writing executed by all Parties.
- (c) The Parties are independent contractors, and there is no joint venture or partnership formed hereby.
- (d) This Agreement shall be governed by, and interpreted and enforced in accordance with the

laws in force in the Province of Ontario and the federal laws of Canada applicable therein (excluding any conflict of laws, rule or principle which might refer such interpretation to the laws of another jurisdiction). Each Party hereby attorns and submits to the exclusive jurisdiction of the Ontario Superior Court of Justice in any action or proceeding arising out of or relating to this Agreement. Further, each Party hereby agrees that all such claims in respect of such actions or proceedings shall be heard and determined in Toronto in such Ontario court.

- (e) This Agreement may be executed by signatures delivered by facsimile transmission or delivered electronically in optically scanned form and/or it may be executed in one or more counterparts, each of which shall be deemed to be an original and all of which, together, shall constitute one and the same instrument.
- (f) This Agreement shall be binding upon and enure to the benefit of the Parties hereto and their respective heirs, executors, administrators and other legal representatives and, to the extent permitted hereunder, their respective successors and permitted assigns.
- (g) In the event that any terms or any part of any term of this Agreement is determined to be void or unenforceable by a court of competent jurisdiction, such term or part of a term shall be considered separate and severable from this Agreement and the remaining terms shall continue in full force and effect.

**[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK;
SIGNATURE PAGE FOLLOWS]**

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed as of the Effective Date.

THE GOVERNING COUNCIL OF THE UNIVERSITY OF TORONTO

Per: 
Name: Jennifer Fraser
Title: Director, Innovations

XANADU QUANTUM TECHNOLOGIES INC.

Per: 
Name: Christian Weedbrook
Title: Founder & CEO

SCHEDULE "A"

CONFIDENTIAL INVENTION DISCLOSURE 10003605

(See Attached)



CONFIDENTIAL INVENTION DISCLOSURE

Innovations & Partnerships Office | Banting Institute, Room 413 | 100 College St. Toronto ON M5G 1L5
Tel: (416) 978-7833 | Fax: (416) 978-8052 | email: ip.officer@utoronto.ca

This form is used to record inventions made using U of T resources, facilities and/or funds managed by U of T and is to be completed by the inventor(s) to satisfy their obligations under U of T's Inventions Policy. For step by step information on how to complete the form, please refer to the invention disclosure guide.

1. Title of Invention:

Systems and methods for nonlinear optical light generation using linearly uncoupled resonators in integrated photonic devices

2. Inventors and Contributors:

- a. Inventors at the University of Toronto: List all individuals who have made an inventive contribution to this disclosure through the use of U of T resources (i.e. faculty, students, postdocs, staff, visiting scientist, etc). Attach separate pages if necessary.

SURNAME, GIVEN NAMES	U of T PERSONNEL NO (if applicable)	DEPARTMENT (List any cross appointments or affiliated institutions)	AFFILIATION WITH U of T (i.e. faculty, research assoc., post-doc, student, staff, visitor, etc.)	EMAIL ADDRESS	CONTACT INFORMATION (non-U of T mailing address, phone, fax)	% CONTRIBUTION (*optional)
Sipe, John E.	811-765	Physics	Faculty	sipe@physics.utoronto.ca	#1205 – 130 Carlton Str. Toronto, ON M5A 4K3 416-964- 9839	50%
Liscidini, Marco		Impact Centre	Visiting professor	marco.liscidini@unipv.it	University of Pavia, Dept. of Physics Via Bassi 6 27100 Pavia, Italy	50%

FOR IPO USE ONLY:

Disclosure Date: July 05, 2018

Disclosure No: 10003605

* If invention is assigned to UofT, percentage will be used as a basis for sharing future revenues. Revenue distribution agreed to by the parties in an assignment agreement will govern.

For more information, see our Disclosure Guide.

- b. External Inventors: List all individuals who have made an inventive contribution to this disclosure using non-U of T resources (i.e. sponsor employees, academic collaborators, etc). Please include names, organization, contact information and email address.

Zachary Vernon: Xanadu Quantum Technologies Inc., 372 Richmond St W, Suite 306, Toronto, ON, M5V1X6, zach@xanadu.ai, 416-304-9629.

Kang Tan: Xanadu Quantum Technologies Inc., 372 Richmond St W, Suite 306, Toronto, ON, M5V1X6, kang@xanadu.ai, 416-304-9629.

Blair Morrison: Xanadu Quantum Technologies Inc., 372 Richmond St W, Suite 306, Toronto, ON, M5V1X6, blair@xanadu.ai, 416-304-9629.

Matteo Menotti : Xanadu Quantum Technologies Inc., 372 Richmond St W, Suite 306, Toronto, ON, M5V1X6, matteo@xanadu.ai, 416-304-9629.

- c. Contributors (Non-inventors): List all individuals at or external to U of T who have not made an inventive contribution but have contributed to the development of the invention. Please include name, organization and email address.

None

3. Location(s) of Work:

Please list all locations (U of T and external) of the work leading to this invention, be specific (i.e. department, building, hospital, etc).

University of Toronto, Physics Building

Xanadu Quantum Technologies Inc., 372 Richmond St W, Suite 306, Toronto, ON, M5V1X6

4. Invention Description:

Please provide a description of this invention for evaluation, highlighting its novel or patentable aspects. Attach separate pages if necessary.

A photonic device comprising a plurality of resonators and a plurality of optical channels. Each resonator from the plurality of resonators has a set of resonance frequencies independently selected from a set of resonance frequencies of each remaining resonator from the plurality of resonators. Each resonator from the plurality of resonators lacks substantially any linear coupling between each remaining resonator from the plurality of resonators. The plurality of resonators defines a spatial overlap region between at least two resonators from the plurality of resonators such that nonlinear optical processes are optimized during operation. A plurality of optical channels is operatively coupled to the plurality of resonators. The plurality of optical channels is configured to receive light from the plurality resonators and configured to send light into the plurality of resonators.

5. Dissemination:

List all publications, abstracts, presentations or any other forms of public dissemination regarding this work, including dates.

None Yes (please provide details)

6. Funding:

Provide details regarding any funding used in the development of this invention (i.e., salary or stipend support, materials, equipment, etc.).

SPONSOR	PROJECT TITLE	RIS FUND #
NSERC Engage	Optimizing light sources for optical quantum computing applications	504198
OCE VIP1	Optimizing light sources for optical quantum computing applications	504199

7. Related Agreements:

Was the work leading to this invention subject to any written or oral contract(s) or other agreement(s) such as: material transfer, data transfer, software licence, confidentiality, collaboration, and/or sponsored research?

No Yes (please provide details)

This work was subject to the IP policy of the NSERC Engage project listed on the previous page.

8. Patent Applications:

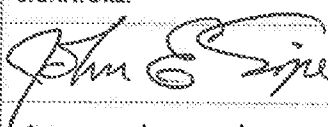
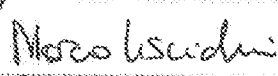
Have any patent applications or other intellectual property protections been filed in respect of this invention?

No Yes (please provide details)

Xanadu Quantum Technologies Inc. has filed a US Provisional Patent application based on this invention. (Application number: 62/691,680)

9. Warranty:

I/We, the Inventors listed in Section 2(a), have read, understood and agree to all of the preceding, and declare that all of the information provided in this disclosure is complete and correct. To the best of our knowledge, all persons who might legally make an ownership claim in this Invention are identified in Section 2(a) and 2(b).

NAME (typed):	SIGNATURE:	DATE:
John Sipe		5 July 2018
Marco Liscidini		5 July 2018

SUBMISSION INSTRUCTIONS:

Please send an electronic draft of the disclosure form to the IP Officer for review prior to obtaining signatures.

Once reviewed for completeness and accuracy, the completed and signed form should be returned to the IP Officer via email at ip.officer@utoronto.ca, in-person, or by mail.

If you need any assistance, please contact the IP Officer.

SCHEDULE "B"
INVENTORS' ASSIGNMENT TO THE UNIVERSITY
(See Attached)

ASSIGNMENT TO THE UNIVERSITY FROM INVENTOR AND REVENUE SHARING AGREEMENT

This assignment and revenue sharing agreement (the "Agreement") is between John E Sipe, Marco Liscidini, their respective heirs, executors, administrators and assigns (collectively, the "Inventor") and The Governing Council of the University of Toronto, its successors and assigns (collectively, the "University").

WHEREAS, the inventor has created certain intellectual property entitled "Systems and methods for nonlinear optical light generation using linearly uncoupled resonators in integrated photonic devices" (Disclosure No. 10003605) as more particularly described in the disclosure form attached as Appendix 1 (the "Invention");

AND WHEREAS, the University and the Inventor jointly own the Invention under the University's *Inventions Policy* (the "Policy", including any successor policy thereto);

AND WHEREAS, rights are being granted to the research sponsor, Xanadu Quantum Technologies Inc., as a condition of the NSERC Engage Agreement and the Assignment of Rights, effective July 10, 2018;

AND WHEREAS, in order to offer rights to the sponsor, the Inventor wishes to assign its interest in the Invention to the University;

NOW THEREFORE this Agreement witnesses that in consideration of the mutual covenants contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by each of the parties, the parties covenant and agree as follows:

1. **Definitions.** In addition to any terms defined above, in this Agreement:
 - (a) "Commercialization Costs" means the legal and other fees incurred directly in the process of establishing and maintaining the legal protection of rights in the Invention;
 - (b) "Management Fee" means a fee for services provided by the University in connection with its commercialization of the Invention; and,
 - (c) "Net Revenue" means the royalty, licensing and other income or equivalent financial return received by the University from the assignment or licensing of the rights in the Invention, less any: (i) Commercialization Costs; and (ii) amounts payable to third parties under prior written agreements that directly relate to the Invention, including but not limited to funding and collaboration agreements.
2. **Assignment.** The Inventor hereby assigns to the University all right, title and interest, whatever the same may be (but without any representation or warranty as to the nature, extent or validity thereof) which the Inventor now has or may in the future have in the Invention, including, without limitation, the right to apply for patents in Canada, the United States of America and any other country, the right to receive any letters patent that may be issued from any such applications and the right to sell, license or assign the Invention or the rights thereto.

3. **Disclosure.** The Inventor shall make full and complete disclosure of the invention to the University, and shall make available to the University any physical embodiments of the invention and other data that will be or that may be useful to the University in exercising its rights in the invention.
4. **Assistance.** The Inventor shall execute, acknowledge and deliver all such further assurances and do all such acts as may be necessary to carry out the intent and purpose of this Agreement, including without limitation, to execute powers of attorney and other documents required to maintain intellectual property protection of the invention, and shall review and provide comments with respect to such intellectual property protection as and when requested by the University.
5. **Revenue Sharing.**
 - (a) Subject to 5(b), the University shall distribute sixty percent (60%) of the Net Revenue to the Inventor. The remaining forty percent (40%) of the Net Revenue shall be retained by the University and distributed in accordance with the Policy.
 - (b) If the Inventor is also the founder of a company and the University assigns or licenses the invention to that company, the Inventor agrees to waive all right to receive its share of the Net Revenue.
6. **Equivalent Revenue.** If an arrangement for commercialization of the invention is made which provides consideration other than cash, the University may liquidate the non-cash assets to the extent it deems necessary to recover Commercialization Costs. The parties shall share the proceeds of such non-cash consideration in the same proportion as provided in section 5.
7. **Payments.** Any money to be paid by the University under this Agreement shall be paid to the Inventor in Canadian funds in equal proportions, annually on or before the thirtieth (30th) day following the anniversary of the Effective Date.
8. **Term and Termination.** [THIS SECTION IS INTENTIONALLY DELETED]
9. **Indemnity.** The University shall indemnify and save the Inventor harmless from and against any loss arising out of or pursuant to any claims or demands in connection with the invention and all costs, damages and expenses (including reasonable legal fees) incurred by the Inventor in connection therewith, except to the extent caused by the breach of any obligations of the Inventor herein or of any representations or warranties given by the Inventor in the disclosure form attached as Appendix 1.
10. **Acknowledgement and Release.** The Inventor acknowledges that, because of the speculative nature of the undertaking to commercialize the invention, the University cannot guarantee that the results will meet the objectives sought. Save and except for the right to enforce the terms contained in this Agreement, the Inventor releases the University from any and all claims that the Inventor may now have or may in future have in respect of the invention. Any disputes arising under this Agreement shall be resolved by the parties in accordance with the dispute resolution procedures set out in the Policy.
11. **Counterparts.** This Agreement may be executed by signatures delivered by facsimile transmission or delivered electronically in optically scanned form; and/or it may be simultaneously executed by the inventors in multiple counterparts, each of which will be considered to be an original instrument, and all of which taken

together, where each inventor has executed at least one counterpart, will constitute one and the same instrument.

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Witness

Inventor

Emanuel Istrate (EMANUEL ISTRATE)

John E Sipe
John E Sipe

~~____~~ (DYLAN MAHLER)

Marco Liscidini
Marco Liscidini

The Governing Council of the University of Toronto

D. Newton

Derek Newton
Assistant Vice-President, Innovation, Partnerships and
Entrepreneurship

Executed at Toronto, Ontario this 2nd day of Aug, 2018 (the "Effective Date")

APPENDIX 1

Invention Disclosure Form



CONFIDENTIAL INVENTION DISCLOSURE

Innovations & Partnerships Office | Banting Institute, Room 413 | 100 College St. Toronto ON M5G 1L5
Tel: (416) 978-7833 | Fax: (416) 978-6052 | email: ip.officer@utoronto.ca

This form is used to record inventions made using U of T resources, facilities and/or funds managed by U of T and is to be completed by the inventor(s) to satisfy their obligations under U of T's Inventions Policy. For step by step information on how to complete the form, please refer to the invention disclosure guide.

1. Title of Invention:

Systems and methods for nonlinear optical light generation using linearly uncoupled resonators in integrated photonic devices

2. Inventors and Contributors:

a. Inventors at the University of Toronto: List all individuals who have made an inventive contribution to this disclosure through the use of U of T resources (i.e. faculty, students, postdocs, staff, visiting scientist, etc). Attach separate pages if necessary.

SURNAME, GIVEN NAMES	U of T PERSONNEL NO (if applicable)	DEPARTMENT (List any cross appointments or affiliated institutions)	AFFILIATION WITH U of T (i.e. faculty, research assoc., post-doc, student, staff, visitor, etc.)	EMAIL ADDRESS	CONTACT INFORMATION (non-U of T mailing address, phone, fax)	% CONTRIBUTION (*optional)
Sipe, John E.	811-765	Physics	Faculty	sipe@physics.utoronto.ca	#1205 -- 130 Carlton Str. Toronto, ON M5A 4K3 416-964- 9839	50%
Liscidini, Marco		Impact Centre	Visiting professor	marco.liscidini@unipv.it	University of Pavia, Dept. of Physics Via Bassi 6 27100 Pavia, Italy	50%

FOR IPO USE ONLY:

Disclosure Date: July 05, 2018

Disclosure No: 10003605

* If invention is assigned to Uoff, percentage will be used as a basis for sharing future revenues. Revenue distribution agreed to by the parties in an assignment agreement will govern.

For more information, see our Disclosure Guide.

- b. External inventors: List all individuals who have made an inventive contribution to this disclosure using non-U of T resources (i.e. sponsor employees, academic collaborators, etc). Please include names, organization, contact information and email address.

Zachary Vernon: Xanadu Quantum Technologies Inc., 372 Richmond St W, Suite 306, Toronto, ON, M5V1X6, zach@xanadu.ai, 416-304-9629.

Kang Tan: Xanadu Quantum Technologies Inc., 372 Richmond St W, Suite 306, Toronto, ON, M5V1X6, kang@xanadu.ai, 416-304-9629.

Blair Morrison: Xanadu Quantum Technologies Inc., 372 Richmond St W, Suite 306, Toronto, ON, M5V1X6, blair@xanadu.ai, 416-304-9629.

Matteo Menotti : Xanadu Quantum Technologies Inc., 372 Richmond St W, Suite 306, Toronto, ON, M5V1X6, matteo@xanadu.ai, 416-304-9629.

- c. Contributors (Non-inventors): List all individuals at or external to U of T who have not made an inventive contribution but have contributed to the development of the invention. Please include name, organization and email address.

None

3. Location(s) of Work:

Please list all locations (U of T and external) of the work leading to this invention, be specific (i.e. department, building, hospital, etc).

University of Toronto, Physics Building

Xanadu Quantum Technologies Inc., 372 Richmond St W, Suite 306, Toronto, ON, M5V1X6

4. Invention Description:

Please provide a description of this invention for evaluation, highlighting its novel or patentable aspects. Attach separate pages if necessary.

A photonic device comprising a plurality of resonators and a plurality of optical channels. Each resonator from the plurality of resonators has a set of resonance frequencies independently selected from a set of resonance frequencies of each remaining resonator from the plurality of resonators. Each resonator from the plurality of resonators lacks substantially any linear coupling between each remaining resonator from the plurality of resonators. The plurality of resonators defines a spatial overlap region between at least two resonators from the plurality of resonators such that nonlinear optical processes are optimized during operation. A plurality of optical channels is operatively coupled to the plurality of resonators. The plurality of optical channels is configured to receive light from the plurality resonators and configured to send light into the plurality of resonators.

5. Dissemination:

List all publications, abstracts, presentations or any other forms of public dissemination regarding this work, including dates.

None Yes (please provide details)

6. Funding:

Provide details regarding any funding used in the development of this invention (i.e. salary or stipend support, materials, equipment, etc.).

SPONSOR	PROJECT TITLE	RIS FUND #
NSERC Engage	Optimizing light sources for optical quantum computing applications	504198
OCE VIP1	Optimizing light sources for optical quantum computing applications	504199

7. Related Agreements:

Was the work leading to this invention subject to any written or oral contract(s) or other agreement(s) such as: material transfer, data transfer, software licence, confidentiality, collaboration, and/or sponsored research?

No Yes (please provide details)

This work was subject to the IP policy of the NSERC Engage project listed on the previous page.

8. Patent Applications:

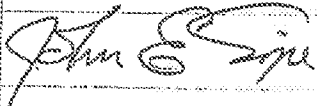

Have any patent applications or other intellectual property protections been filed in respect of this invention?

No Yes (please provide details)

Xanadu Quantum Technologies Inc. has filed a US Provisional Patent application based on this invention. (Application number: 62/691,680)

9. Warranty:

I/We, the inventors listed in Section 2(a), have read, understood and agree to all of the preceding, and declare that all of the information provided in this disclosure is complete and correct. To the best of our knowledge, all persons who might legally make an ownership claim in this invention are identified in Section 2(a) and 2(b).

NAME (typed):	SIGNATURE:	DATE:
John Sipe		5 July 2018
Marco Liscidini		5 July 2018

SUBMISSION INSTRUCTIONS:

Please send an electronic draft of the disclosure form to the IP Officer for review prior to obtaining signatures.

Once reviewed for completeness and accuracy, the completed and signed form should be returned to the IP Officer via email at ip.officer@utoronto.ca, in-person, or by mail.

If you need any assistance, please contact the IP Officer.

SCHEDULE "C"

INTELLECTUAL PROPERTY RIGHTS

List of Patents

App. No.	Region	Type	Filing Date	Title	Inventors	Applicant
62/691,680	United States of America	Provisional	June 29, 2018	Systems and methods for nonlinear optical light generation using linearly uncoupled resonators in integrated photonic devices	John SIPE; Marco LISCIDINI; Zachary VERNON; Kang TAN, Blair MORRISON, and Matteo MENOTTI;	Xanadu Quantum Technologies Inc.

SCHEDULE "C"

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PATENT