

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT4271414

|   |   |                       |
|---|---|-----------------------|
| <b>SUBMISSION TYPE:</b>   | NEW ASSIGNMENT  |                       |
| <b>NATURE OF CONVEYANCE:</b>  | ASSIGNMENT  |                       |
| <b>CONVEYING PARTY DATA</b>   |   |                       |
|   | <b>Name</b>   | <b>Execution Date</b> |
|   | PAUL ALSING   | 01/31/2017            |
|   | MICHAEL FANTO   | 02/01/2017            |
|   | RICHARD KIM   | 02/12/2017            |
|   | GORDON LOTT   | 02/13/2017            |
|   | ATTILA SZEP   | 02/01/2017            |
|   | CHRISTOPHER TISON   | 02/01/2017            |
| <b>RECEIVING PARTY DATA</b>   |   |                       |
| <b>Name:</b>  | GOVERNMENT OF THE UNITED STATES, AS REPRESENTED BY THE SECRETARY OF THE AIR FORCE |                       |
| <b>Street Address:</b>  | 2240 B STREET   |                       |
| <b>Internal Address:</b>  | AFMCLO/JAZ  |                       |
| <b>City:</b>  | WRIGHT-PATTERSON AFB  |                       |
| <b>State/Country:</b>   | OHIO  |                       |
| <b>Postal Code:</b>   | 45433   |                       |
| <b>PROPERTY NUMBERS Total: 1</b>  |   |                       |
|   | <b>Property Type</b>  | <b>Number</b>         |
|   | Application Number:   | 15430775              |
| <b>CORRESPONDENCE DATA</b>  |   |                       |
| <b>Fax Number:</b>  | (937)255-3733   |                       |
| <i>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.</i> |   |                       |
| <b>Phone:</b>   | 937-255-2838  |                       |
| <b>Email:</b>   | afmclo.jaz.1@us.af.mil  |                       |
| <b>Correspondent Name:</b>  | DEPARTMENT OF THE AIR FORCE AFMCLO/JAZ  |                       |
| <b>Address Line 1:</b>  | 2240 B STREET   |                       |
| <b>Address Line 2:</b>  | BUILDING 11   |                       |
| <b>Address Line 4:</b>  | WRIGHT-PATTERSON AFB, OHIO 45433-7109   |                       |
| <b>ATTORNEY DOCKET NUMBER:</b>  | AFD 1515  |                       |
| <b>NAME OF SUBMITTER:</b>   | CHARLES R. FIGER, JR.   |                       |
| <b>SIGNATURE:</b>   | /Charles R. Figer, Jr./   |                       |

|   |  |
|---|--|
| <b>DATE SIGNED:</b>   | 02/13/2017   |
|   | This document serves as an Oath/Declaration (37 CFR 1.63). |
| <b>Total Attachments: 9</b><br>source=Executed_Dec-Assign#page1.tif<br>source=Executed_Dec-Assign#page2.tif<br>source=Executed_Dec-Assign#page3.tif<br>source=Executed_Dec-Assign#page4.tif<br>source=Executed_Dec-Assign#page5.tif<br>source=Executed_Dec-Assign#page6.tif<br>source=Executed_Dec-Assign#page7.tif<br>source=Executed_Dec-Assign#page8.tif<br>source=Executed_Dec-Assign#page9.tif |  |

**DECLARATION / ASSIGNMENT**  
**(Inventor with Co-Inventors)**

WHEREAS, I, Paul Alsing, while employed by the Government of the United States, jointly made an invention with Richard S. Kim, Atilla A. Szep, Michael Fanto, Gordon Lott, and Christopher Tison described in invention disclosure AFD 1515 entitled "Integrated Quantum Information Processing Controlled Phase (C-Phase) Gate based on Polarization Tunable Directional Optical Waveguide Coupled with Two-Segment Electrodes", to be filed as an application for Letters Patent of the United States (Application Serial Number 15/430,775, filed February 13, 2017), and I hereby authorize and request AFMCLO/JAZ to insert here in the above parentheses (Application Serial Number, filed) the filing date and application number of said application when known;

WHEREAS, The above-identified application for Letters Patent was made or authorized to be made by me;

WHEREAS, I believe that I am an original joint inventor of a claimed invention in the application;

WHEREAS, I hereby acknowledge that any willful false statement made in this Declaration/Assignment is punishable under 18 U.S.C. § 1001 by fine, imprisonment of not more than five (5) years, or both;

WHEREAS, the conditions under which said invention was made are such as to entitle the Government of the United States as represented by the Secretary of the Air Force, under Paragraph 1(a) of Executive Order 10096, to the entire right, title and interest therein, including foreign rights;

NOW, THEREFORE, to all whom it may concern, be it known that for and in consideration of the premises and other valuable considerations, I, Paul Alsing:

HEREBY HAVE SOLD, ASSIGNED, AND TRANSFERRED, and by these presents do sell, assign, and transfer unto the Government of the United States as represented by the Secretary of the Air Force, my entire right, title, and interest, in any jurisdiction throughout the world, in and to the aforesaid invention described in the aforesaid application for Letters Patent of the United States, made jointly with Richard S. Kim, Atilla A. Szep, Michael Fanto, Gordon Lott, and Christopher Tison, all Letters Patent issuing thereon, and any continuations, continuations-in-part, divisions, and reissues or extensions thereof; and all priority resulting from the filing of the aforesaid application for patent in the United States;

HEREBY AUTHORIZE AND REQUEST any official whose duty it is to issue patents, to issue any patent thereon to the Government of the United States, as represented by the Secretary of the Air Force, and his successors, as assignee of my entire right, title and interest in and to the same, for the sole use for the full term or terms for which said patents and any continuations, continuations-in-part, divisions and reissues or extensions thereof are, or may be, granted as fully and entirely as the same would have been held by me had this Assignment not been made;

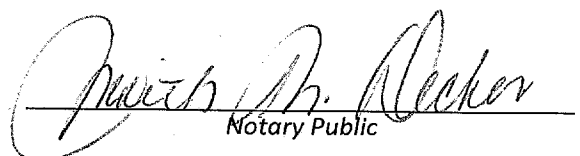
HEREBY ALSO GRANT to the Government of the United States, as represented by the Secretary of the Air Force, the option to take the entire right, title and interest in the invention or all applications for Letters Patent thereon in all countries or jurisdictions foreign to the United States in which the Government of the United States may file, or cause to be filed, applications for Letters Patent, without payment to me of any further consideration; provided, however, that this grant of an option to take foreign rights in the invention must be exercised by written notice to me within eight months of the first filing date of any application for United States Letters Patent covering the invention or within eight months from the declassification of the invention, whichever is later, and that all foreign rights not exercised under the option are left to me, subject to a nonexclusive, irrevocable, royalty-free license to the Government of the United States in any patent which may issue on said invention in any country or jurisdiction foreign to the United States, including the power to issue sublicenses for use on behalf of the Government of the United States and/or in furtherance of the foreign policies of the United States of America; and

HEREBY AGREE to execute any and all applications for Letters Patent, and to furnish all data and documents and to execute any papers which may be necessary or convenient for the preparation, filing, or prosecution of such applications, except it is understood that I shall not be subject to any out-of-pocket expense relative to such action.

  
Paul Alsing

SUBSCRIBED AND ACKNOWLEDGED before me by Paul Alsing this 31 day of January

2017, at the city of Rome in the County of Oneida and State of New York.

  
Notary Public

JUDITH M. DECKER

NOTARY PUBLIC, State of New York  
Appointed in Oneida County  
Commission Expires 16 Nov. 2017

**PATENT**

**REEL: 041236 FRAME: 0287**

DECLARATION / ASSIGNMENT  
(Inventor with Co-Inventors)

WHEREAS, I, Michael Fanto, while employed by the Government of the United States, jointly made an invention with Richard S. Kim, Atilla A. Szep, Paul Alsing, Gordon Lott, and Christopher Tison described in invention disclosure AFD 1515 entitled "Integrated Quantum Information Processing Controlled Phase (C-Phase) Gate based on Polarization Tunable Directional Optical Waveguide Coupled with Two-Segment Electrodes", to be filed as an application for Letters Patent of the United States (Application Serial Number 15/430,775, filed February 13, 2017), and I hereby authorize and request AFMCLO/JAZ to insert here in the above parentheses (Application Serial Number, filed) the filing date and application number of said application when known;

WHEREAS, The above-identified application for Letters Patent was made or authorized to be made by me;

WHEREAS, I believe that I am an original joint inventor of a claimed invention in the application;

WHEREAS, I hereby acknowledge that any willful false statement made in this Declaration/Assignment is punishable under 18 U.S.C. § 1001 by fine, imprisonment of not more than five (5) years, or both;

WHEREAS, the conditions under which said invention was made are such as to entitle the Government of the United States as represented by the Secretary of the Air Force, under Paragraph 1(a) of Executive Order 10096, to the entire right, title and interest therein, including foreign rights;

NOW, THEREFORE, to all whom it may concern, be it known that for and in consideration of the premises and other valuable considerations, I, Michael Fanto:

HEREBY HAVE SOLD, ASSIGNED, AND TRANSFERRED, and by these presents do sell, assign, and transfer unto the Government of the United States as represented by the Secretary of the Air Force, my entire right, title, and interest, in any jurisdiction throughout the world, in and to the aforesaid invention described in the aforesaid application for Letters Patent of the United States, made jointly with Richard S. Kim, Atilla A. Szep, Paul Alsing, Gordon Lott, and Christopher Tison, all Letters Patent issuing thereon, and any continuations, continuations-in-part, divisions, and reissues or extensions thereof; and all priority resulting from the filing of the aforesaid application for patent in the United States;

HEREBY AUTHORIZE AND REQUEST any official whose duty it is to issue patents, to issue any patent thereon to the Government of the United States, as represented by the Secretary of the Air Force, and his successors, as assignee of my entire right, title and interest in and to the same, for the sole use for the full term or terms for which said patents and any continuations, continuations-in-part, divisions and reissues or extensions thereof are, or may be, granted as fully and entirely as the same would have been held by me had this Assignment not been made;


HEREBY ALSO GRANT to the Government of the United States, as represented by the Secretary of the Air Force, the option to take the entire right, title and interest in the invention or all applications for Letters Patent thereon in all countries or jurisdictions foreign to the United States in which the Government of the United States may file, or cause to be filed, applications for Letters Patent, without payment to me of any further consideration; provided, however, that this grant of an option to take foreign rights in the invention must be exercised by written notice to me within eight months of the first filing date of any application for United States Letters Patent covering the invention or within eight months from the declassification of the invention, whichever is later, and that all foreign rights not exercised under the option are left to me, subject to a nonexclusive, irrevocable, royalty-free license to the Government of the United States in any patent which may issue on said invention in any country or jurisdiction foreign to the United States, including the power to issue sublicenses for use on behalf of the Government of the United States and/or in furtherance of the foreign policies of the United States of America; and

HEREBY AGREE to execute any and all applications for Letters Patent, and to furnish all data and documents and to execute any papers which may be necessary or convenient for the preparation, filing, or prosecution of such applications, except it is understood that I shall not be subject to any out-of-pocket expense relative to such action.

  
Michael Fanto

SUBSCRIBED AND ACKNOWLEDGED before me by Michael Fanto this 15<sup>th</sup> day of February 2017, at the city of Rochester in the County of Monroe and State of New York.

GEORGEANNE G. HOGAN  
NOTARY PUBLIC, STATE OF NEW YORK  
No. 01H0802131  
QUALIFIED IN MONROE COUNTY  
MY COMMISSION EXPIRES OCT. 21, 2018

  
Notary Public

**DECLARATION / ASSIGNMENT**  
(Inventor with Co-inventors)

WHEREAS, I, Richard Kim, while employed by UDRI ("Contractor"), jointly made an invention with Atila Szep, Michael Fanto, Paul Alsing, Gordon Lott, and Christopher Tison under contract/subcontract number FA8650-10-2-7028 described in invention disclosure AFD 1515 entitled "Integrated Quantum Information Processing Controlled Phase (C-Phase) Gate based on Polarization Tunable Directional Optical Waveguide Coupler with Two-Segment Electrodes", to be filed as an application for Letters Patent of the United States (Application Serial Number 15/430,775, filed February 13, 2017), and I hereby authorize and request AFMCLO/JAZ to insert here in the above parentheses (Application Serial Number, filed) the filing date and application number of said application when known;

WHEREAS, Contractor has indicated its intention not to file an application for Letters Patent on the aforesaid invention;

WHEREAS, The above-identified application for Letters Patent was made or authorized to be made by me;

WHEREAS, I believe that I am an original inventor of a claimed invention in the application;

WHEREAS, I hereby acknowledge that any willful false statement made in this Declaration/Assignment is punishable under 18 U.S.C. § 1001 by fine, imprisonment of not more than five (5) years, or both;

NOW, THEREFORE, to all whom it may concern, be it known that for and in consideration of the premises and other valuable considerations, and in recognition of my obligation to the Government of the United States under the above contract and by agreement, I, Richard Kim:

HEREBY HAVE SOLD, ASSIGNED, AND TRANSFERRED, and by these presents do sell, assign, and transfer unto the Government of the United States as represented by the Secretary of the Air Force, my entire right, title, and interest, in any jurisdiction throughout the world, in and to the aforesaid invention described in the aforesaid application for Letters Patent of the United States, made jointly with Atila Szep, Michael Fanto, Paul Alsing, Gordon Lott, and Christopher Tison, all Letters Patent issuing thereon, and any continuations, continuations-in-part, divisions, and reissues or extensions thereof; and all priority resulting from the filing of the aforesaid application for patent in the United States, subject to the reservation of any license to which Contractor may be entitled under the above contract;

HEREBY AUTHORIZE AND REQUEST any official whose duty it is to issue patents, to issue any patent thereon to the Government of the United States, as represented by the Secretary of the Air Force, and his successors, as assignee of my entire right, title and interest in and to the same, for the sole use for the full term or terms for which said patents and any continuations, continuations-in-part, divisions and reissues or extensions thereof are, or may be, granted as fully and entirely as the same would have been held by me had this Assignment not been made;

HEREBY ALSO GRANT to the Government of the United States, as represented by the Secretary of the Air Force, the option to take the entire right, title and interest in the invention or all applications for Letters Patent thereon in all countries or jurisdictions foreign to the United States in which the Government of the United States may file, or cause to be filed, applications for Letters Patent, without payment to me of any further consideration; provided, however, that this grant of an option to take foreign rights in the invention must be exercised by written notice to me within eight months of the first filing date of any application for United States Letters Patent covering the invention or within eight months from the declassification of the invention, whichever is later, and that all foreign rights not exercised under the option are left to me, subject to a nonexclusive, irrevocable, royalty-free license to the Government of the United States in any patent which may issue on said invention in any country or jurisdiction foreign to the United States, including the power to issue sublicenses for use on behalf of the Government of the United States and/or in furtherance of the foreign policies of the United States of America; and

HEREBY AGREE to execute, and assist Contractor in executing, any and all applications for Letters Patent, and to furnish all data and documents and to execute any papers which may be necessary or convenient for the preparation, filing, or prosecution of such applications, except it is understood that I shall not be subject to any out-of-pocket expense relative to such action.

Contractor joins in and agrees to this assignment and, except for the reservation of any license under the above contract, relinquishes and assigns to the Government of the United States, as represented by the Secretary of the Air Force their entire right, title, and interest throughout the world in and to such inventions, and further agrees to furnish to the Government of the United States, upon request, any available information and documents necessary for the timely preparation, filing, and prosecution of such applications, for Letters Patent.

*Richard Kim*  
*Richard Kim*

Richard Kim  
RK

(See attached Acknowledgment)

SUBSCRIBED AND ACKNOWLEDGED before me by Richard Kim this # 12 day of February 2017, at the city of Irving in the County of Orange and State of California

*[Signature]*

Notary Public

# ALL-PURPOSE ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this Certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California

County of Orange } SS.

On February 12th, 2017, before me, Daniel Lee, Notary Public,

personally appeared Richard Kim, who proved to me on the

basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.



PLACE NOTARY SEAL IN ABOVE SPACE

Daniel Lee  
NOTARY'S SIGNATURE

## OPTIONAL INFORMATION

The information below is optional. However, it may prove valuable and could prevent fraudulent attachment of this form to an unauthorized document.

### CAPACITY CLAIMED BY SIGNER (PRINCIPAL)

- ☐ INDIVIDUAL  
☐ CORPORATE OFFICER \_\_\_\_\_ TITLE(S)  
☐ PARTNER(S)  
☐ ATTORNEY-IN-FACT  
☐ GUARDIAN/CONSERVATOR  
☐ SUBSCRIBING WITNESS  
☐ OTHER: \_\_\_\_\_

### DESCRIPTION OF ATTACHED DOCUMENT

Declaration / Assignment  
TITLE OR TYPE OF DOCUMENT

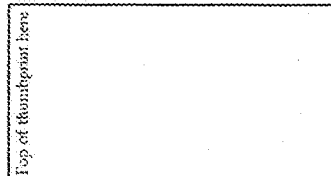
NUMBER OF PAGES  
1

February 12th, 2017  
DATE OF DOCUMENT

SIGNER (PRINCIPAL) IS REPRESENTING:  
NAME OF PERSON(S) OR ENTITY(IES)  
\_\_\_\_\_  
\_\_\_\_\_

RIGHT  
THUMBPRINT  
OF  
SIGNER

OTHER



### INVENTION ELECTION

UDRI, as employer of Richard Kim, a named joint inventor with at least one Government employee inventor, in:

|                         |   |
|-------------------------|---|
| Air Force Docket Number | AFD 1515  |
| Title                   | Integrated Quantum Information Processing Controlled Phase (C-Phase) Gate based on Polarization Tunable Directional Optical Waveguide Coupler with Two-Segment Electrodes |
| Government Inventor(s)  | Attila Szep, Michael Fanto, Paul Aising, Joseph Osman and Gordon Lott   |
| FAR Contract Number     | FA8650-10-2-7028  |

(hereafter "the Invention"), hereby signify my intention

- ☐ to file a patent application for letters patent on the above-referenced Invention and to retain my entire right, title, and interest in the Invention disclosed, subject to any rights to which the Government of the United States is entitled. I further agree to negotiate a separate agreement with the Government of the United States defining joint ownership terms for the Invention.

~or~

- ☒ not to file a patent application for letters patent on the Invention. I further agree to assign to the Government of the United States, as represented by the Secretary of the Air Force, my entire right, title, and interest throughout the world in the Invention disclosed and any subsequent continuations, continuations-in-part, divisions, and reissues or extensions thereof. I further agree to assist the Government of the United States, upon request, by furnishing any available information and documents, performing all acts, and doing all things that may be reasonably necessary to timely prepare, file, and prosecute such applications and to make the assignment of my entire right, title, and interest effective.



Signature

Matthew Willenbrink

Printed Name

UDRI

On behalf of

Director, Technology Partnerships

Title

February 3, 2016

Date

DECLARATION / ASSIGNMENT  
(Inventor with Co-Inventors)

WHEREAS, I, Gordon Lott, while employed by the Government of the United States, jointly made an invention with Richard S. Kim, Atilia A. Szepe, Michael Fanto, Paul Alsing, and Christopher Tison described in invention disclosure AFD 1515 entitled "Integrated Quantum Information Processing Controlled Phase (C-Phase) Gate based on Polarization Tunable Directional Optical Waveguide Coupled with Two-Segment Electrodes", to be filed as an application for Letters Patent of the United States (Application Serial Number 15/430,557, filed February 13, 2017), and I hereby authorize and request AFMCLO/IAZ to insert here in the above parentheses (Application Serial Number, filed) the filing date and application number of said application when known;

WHEREAS, The above-identified application for Letters Patent was made or authorized to be made by me;

WHEREAS, I believe that I am an original joint inventor of a claimed invention in the application;

WHEREAS, I hereby acknowledge that any willful false statement made in this Declaration/Assignment is punishable under 18 U.S.C. § 1001 by fine, imprisonment of not more than five (5) years, or both;

WHEREAS, the conditions under which said invention was made are such as to entitle the Government of the United States as represented by the Secretary of the Air Force, under Paragraph 1(a) of Executive Order 10096, to the entire right, title and interest therein, including foreign rights;

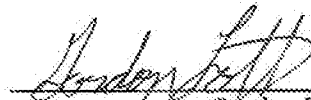
NOW, THEREFORE, to all whom it may concern, be it known that for and in consideration of the premises and other valuable considerations, I, Gordon Lott:

HEREBY HAVE SOLD, ASSIGNED, AND TRANSFERRED, and by these presents do sell, assign, and transfer unto the Government of the United States as represented by the Secretary of the Air Force, my entire right, title, and interest, in any jurisdiction throughout the world, in and to the aforesaid invention described in the aforesaid application for Letters Patent of the United States, made jointly with Richard S. Kim, Atilia A. Szepe, Michael Fanto, Paul Alsing, and Christopher Tison, all Letters Patent issuing thereon, and any continuations, continuations-in-part, divisions, and reissues or extensions thereof; and all priority resulting from the filing of the aforesaid application for patent in the United States;

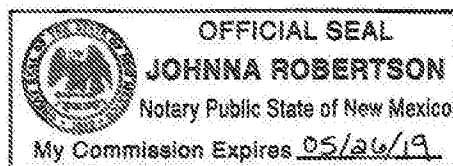
HEREBY AUTHORIZE AND REQUEST any official whose duty it is to issue patents, to issue any patent thereon to the Government of the United States, as represented by the Secretary of the Air Force, and his successors, as assignee of my entire right, title and interest in and to the same, for the sole use for the full term or terms for which said patents and any continuations, continuations-in-part, divisions and reissues or extensions thereof are, or may be, granted as fully and entirely as the same would have been held by me had this Assignment not been made;

HEREBY ALSO GRANT to the Government of the United States, as represented by the Secretary of the Air Force, the option to take the entire right, title and interest in the invention or all applications for Letters Patent thereon in all countries or jurisdictions foreign to the United States in which the Government of the United States may file, or cause to be filed, applications for Letters Patent, without payment to me of any further consideration; provided, however, that this grant of an option to take foreign rights in the invention must be exercised by written notice to me within eight months of the first filing date of any application for United States Letters Patent covering the invention or within eight months from the declassification of the invention, whichever is later, and that all foreign rights not exercised under the option are left to me, subject to a nonexclusive, irrevocable, royalty-free license to the Government of the United States in any patent which may issue on said invention in any country or jurisdiction foreign to the United States, including the power to issue sublicenses for use on behalf of the Government of the United States and/or in furtherance of the foreign policies of the United States of America; and

HEREBY AGREE to execute any and all applications for Letters Patent, and to furnish all data and documents and to execute any papers which may be necessary or convenient for the preparation, filing, or prosecution of such applications, except it is understood that I shall not be subject to any out-of-pocket expense relative to such action.

  
Gordon Lott

SUBSCRIBED AND ACKNOWLEDGED before me by Gordon Lott this 13<sup>th</sup> day of February 2017, at the city of Albuquerque in the County of Bernalillo and State of New Mexico.



  
Notary Public

**DECLARATION / ASSIGNMENT**  
(Inventor with Co-Inventors)

WHEREAS, I, **Attila A. Szep**, while employed by the Government of the United States, jointly made an invention with **Richard S. Kim, Michael Fanto, Paul Alsing, Gordon Lott, and Christopher Tison** described in invention disclosure AFD 1515 entitled "Integrated Quantum Information Processing Controlled Phase (C-Phase) Gate based on Polarization Tunable Directional Optical Waveguide Coupled with Two-Segment Electrodes", to be filed as an application for Letters Patent of the United States (Application Serial Number 15/430,775, filed February 13, 2017), and I hereby authorize and request AFMCLO/JAZ to insert here in the above parentheses (Application Serial Number, filed) the filing date and application number of said application when known;

WHEREAS, The above-identified application for Letters Patent was made or authorized to be made by me;

WHEREAS, I believe that I am an original joint inventor of a claimed invention in the application;

WHEREAS, I hereby acknowledge that any willful false statement made in this Declaration/Assignment is punishable under 18 U.S.C. § 1001 by fine, imprisonment of not more than five (5) years, or both;

WHEREAS, the conditions under which said invention was made are such as to entitle the Government of the United States as represented by the Secretary of the Air Force, under Paragraph 1(a) of Executive Order 10096, to the entire right, title and interest therein, including foreign rights;

NOW, THEREFORE, to all whom it may concern, be it known that for and in consideration of the premises and other valuable considerations, I, **Attila A. Szep**:

**HEREBY HAVE SOLD, ASSIGNED, AND TRANSFERRED**, and by these presents do sell, assign, and transfer unto the Government of the United States as represented by the Secretary of the Air Force, my entire right, title, and interest, in any jurisdiction throughout the world, in and to the aforesaid invention described in the aforesaid application for Letters Patent of the United States, made jointly with **Richard S. Kim, Michael Fanto, Paul Alsing, Gordon Lott, and Christopher Tison**, all Letters Patent issuing thereon, and any continuations, continuations-in-part, divisions, and reissues or extensions thereof; and all priority resulting from the filing of the aforesaid application for patent in the United States;

**HEREBY AUTHORIZE AND REQUEST** any official whose duty it is to issue patents, to issue any patent thereon to the Government of the United States, as represented by the Secretary of the Air Force, and his successors, as assignee of my entire right, title and interest in and to the same, for the sole use for the full term or terms for which said patents and any continuations, continuations-in-part, divisions and reissues or extensions thereof are, or may be, granted as fully and entirely as the same would have been held by me had this Assignment not been made;

**HEREBY ALSO GRANT** to the Government of the United States, as represented by the Secretary of the Air Force, the option to take the entire right, title and interest in the invention or all applications for Letters Patent thereon in all countries or jurisdictions foreign to the United States in which the Government of the United States may file, or cause to be filed, applications for Letters Patent, without payment to me of any further consideration; provided, however, that this grant of an option to take foreign rights in the invention must be exercised by written notice to me within eight months of the first filing date of any application for United States Letters Patent covering the invention or within eight months from the declassification of the invention, whichever is later, and that all foreign rights not exercised under the option are left to me, subject to a nonexclusive, irrevocable, royalty-free license to the Government of the United States in any patent which may issue on said invention in any country or jurisdiction foreign to the United States, including the power to issue sublicenses for use on behalf of the Government of the United States and/or in furtherance of the foreign policies of the United States of America; and

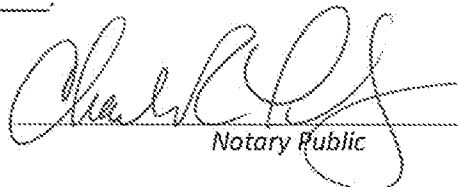
**HEREBY AGREE** to execute any and all applications for Letters Patent, and to furnish all data and documents and to execute any papers which may be necessary or convenient for the preparation, filing, or prosecution of such applications, except it is understood that I shall not be subject to any out-of-pocket expense relative to such action.

  
Attila A. Szep

SUBSCRIBED AND ACKNOWLEDGED before me by Attila A. Szep this 15<sup>th</sup> day of

February 2017, at the city of Wright-Patterson AFB in the County of

Greene and State of Ohio

  
Notary Public

**DECLARATION / ASSIGNMENT  
(Inventor with Co-inventors)**

**WHEREAS, I, Christopher Tison**, while employed by **PAR Government Systems Corp.** ("Contractor"), jointly made an invention with **Richard Kim, Atilla Szep, Michael Fanto, Paul Alsing, and Gordon Lott** under contract/subcontract number **FA8750-09-D-0032** described in invention disclosure **AFD 1515** entitled "**Integrated Quantum Information Processing Controlled Phase (C-Phase) Gate based on Polarization Tunable Directional Optical Waveguide Coupler with Two-Segment Electrodes**", to be filed as an application for Letters Patent of the United States (Application Serial Number 15/430,775, filed February 13, 2017), and I hereby authorize and request AFMCLO/JAZ to insert here in the above parentheses (Application Serial Number, filed) the filing date and application number of said application when known;

**WHEREAS, Contractor** has indicated its intention not to file an application for Letters Patent on the aforesaid invention;

**WHEREAS, The above-identified application for Letters Patent was made or authorized to be made by me;**

**WHEREAS, I believe that I am an original inventor of a claimed invention in the application;**

**WHEREAS, I hereby acknowledge that any willful false statement made in this Declaration/Assignment is punishable under 18 U.S.C. § 1001 by fine, imprisonment of not more than five (5) years, or both;**

**NOW, THEREFORE, to all whom it may concern, be it known that for and in consideration of the premises and other valuable considerations, and in recognition of my obligation to the Government of the United States under the above contract and by agreement, I, Christopher Tison:**

**HEREBY HAVE SOLD, ASSIGNED, AND TRANSFERRED**, and by these presents do sell, assign, and transfer unto the Government of the United States as represented by the Secretary of the Air Force, my entire right, title, and interest, in any jurisdiction throughout the world, in and to the aforesaid invention described in the aforesaid application for Letters Patent of the United States, made jointly with **Richard Kim, Atilla Szep, Michael Fanto, Paul Alsing, and Gordon Lott**, all Letters Patent issuing thereon, and any continuations, continuations-in-part, divisions, and reissues or extensions thereof; and all priority resulting from the filing of the aforesaid application for patent in the United States, subject to the reservation of any license to which **Contractor** may be entitled under the above contract;

**HEREBY AUTHORIZE AND REQUEST** any official whose duty it is to issue patents, to issue any patent thereon to the Government of the United States, as represented by the Secretary of the Air Force, and his successors, as assignee of my entire right, title and interest in and to the same, for the sole use for the full term or terms for which said patents and any continuations, continuations-in-part, divisions and reissues or extensions thereof are, or may be, granted as fully and entirely as the same would have been held by me had this Assignment not been made;

**HEREBY ALSO GRANT** to the Government of the United States, as represented by the Secretary of the Air Force, the option to take the entire right, title and interest in the invention or all applications for Letters Patent thereon in all countries or jurisdictions foreign to the United States in which the Government of the United States may file, or cause to be filed, applications for Letters Patent, without payment to me of any further consideration; provided, however, that this grant of an option to take foreign rights in the invention must be exercised by written notice to me within eight months of the first filing date of any application for United States Letters Patent covering the invention or within eight months from the declassification of the invention, whichever is later, and that all foreign rights not exercised under the option are left to me, subject to a nonexclusive, irrevocable, royalty-free license to the Government of the United States in any patent which may issue on said invention in any country or jurisdiction foreign to the United States, including the power to issue sublicenses for use on behalf of the Government of the United States and/or in furtherance of the foreign policies of the United States of America; and

**HEREBY AGREE** to execute, and assist Contractor in executing, any and all applications for Letters Patent, and to furnish all data and documents and to execute any papers which may be necessary or convenient for the preparation, filing, or prosecution of such applications, except it is understood that I shall not be subject to any out-of-pocket expense relative to such action.

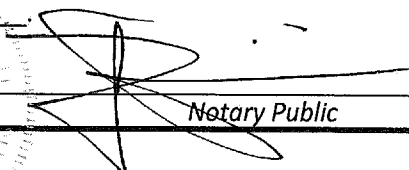
Contractor joins in and agrees to this assignment and, except for the reservation of any license under the above contract, relinquishes and assigns to the Government of the United States, as represented by the Secretary of the Air Force their entire right, title, and interest throughout the world in and to such inventions, and further agrees to furnish to the Government of the United States, upon request, any available information and documents necessary for the timely preparation, filing, and prosecution of such applications, for Letters Patent.

  
Christopher Tison

SUBSCRIBED AND ACKNOWLEDGED before me by Christopher Tison this 15 day of February 2017, at the city of Rome in the County of Oneida and State of New York

JOSEPH A. MANCINI  
NOTARY PUBLIC, State of New York  
No. 02MA6072019

Appointed in Oneida County  
Commission Expires 25 Mar 2019

  
Notary Public

**PATENT  
REEL: 041236 FRAME: 0294**

### INVENTION ELECTION

Par Government Systems Corporation, as employer of Christopher Tison, a named joint inventor with at least one Government employee inventor in:

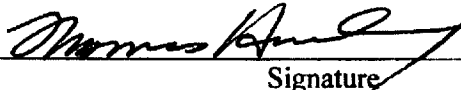
|                         |   |
|-------------------------|---|
| Air Force Docket Number | AFD 1515  |
| Title                   | INTEGRATED QUANTUM INFORMATION PROCESSING CONTROLLED PHASE (C-PHASE) GATE BASED ON POLARIZATION TUNABLE DIRECTIONAL OPTICAL WAVEGUIDE COUPLER WITH TWO-SEGMENT ELECTRODES |
| Government Inventors    | Attila Szep, Michael Fanto, Paul Alsing, and Gordon Lott  |
| FAR Contract Number     | FA8750-09-D-0032  |

(hereafter "the Invention"), hereby signify my intention

- ☐ to file a patent application for letters patent on the above-referenced Invention and to retain my entire right, title, and interest in the Invention disclosed, subject to any rights to which the Government of the United States is entitled. I further agree to negotiate a separate agreement with the Government of the United States defining joint ownership terms for the Invention.

~or~

- ☒ not to file a patent application for letters patent on the Invention. I further agree to assign to the Government of the United States, as represented by the Secretary of the Air Force, my entire right, title, and interest throughout the world in the Invention disclosed and any subsequent continuations, continuations-in-part, divisions, and reissues or extensions thereof. I further agree to assist the Government of the United States, upon request, by furnishing any available information and documents, performing all acts, and doing all things that may be reasonably necessary to timely prepare, file, and prosecute such applications and to make the assignment of my entire right, title, and interest effective.



Signature

Thomas Harding

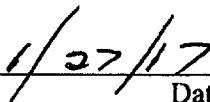
Printed Name

PAR GOVERNMENT SYSTEMS CORPORATION

On behalf of

Vice President Business Management & Contracts

Title



Date