

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT5480740

SUBMISSION TYPE:	CORRECTIVE ASSIGNMENT
NATURE OF CONVEYANCE:	Corrective Assignment to correct the NAME OF FIRST INVENTOR previously recorded on Reel 043753 Frame 0049. Assignor(s) hereby confirms the ASSIGNMENT OF ASSIGNORS INTEREST.
CONVEYING PARTY DATA	
Name	Execution Date
ANTONIO MEZZACAPO	03/13/2019
JAY M. GAMBETTA	09/30/2017
ABHINAV KANDALA	09/29/2017
MAIKA TAKITA	09/29/2017
PAUL K. TEMME	09/29/2017
RECEIVING PARTY DATA	
Name:	INTERNATIONAL BUSINESS MACHINES CORPORATION
Street Address:	NEW ORCHARD ROAD
City:	ARMONK
State/Country:	NEW YORK
Postal Code:	10504
PROPERTY NUMBERS Total: 1	
Property Type	Number
Application Number:	15720577
CORRESPONDENCE DATA	
Fax Number:	(860)286-0115
<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>	
Phone:	860-286-2929
Email:	usptopatentmail@cantorcolburn.com
Correspondent Name:	CANTOR COLBURN LLP-IBM YORKTOWN
Address Line 1:	20 CHURCH STREET
Address Line 2:	22ND FLOOR
Address Line 4:	HARTFORD, CONNECTICUT 06103
ATTORNEY DOCKET NUMBER:	P201705738US02
NAME OF SUBMITTER:	TANMAY DHARMADHIKARI
SIGNATURE:	/tanmaydharmadhikari,#L0938/
DATE SIGNED:	04/18/2019

Total Attachments: 8

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PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT4621769

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
CONVEYING PARTY DATA	
Name	Execution Date
MEZZACAPO ANTONIO	09/29/2017
JAY M. GAMBETTA	09/30/2017
ABHINAV KANDALA	09/29/2017
MAIKA TAKITA	09/29/2017
PAUL K. TEMME	09/29/2017
RECEIVING PARTY DATA	
Name:	INTERNATIONAL BUSINESS MACHINES CORPORATION
Street Address:	NEW ORCHARD ROAD
City:	ARMONK
State/Country:	NEW YORK
Postal Code:	10504
PROPERTY NUMBERS Total: 1	
Property Type	Number
Application Number:	15720577
CORRESPONDENCE DATA	
Fax Number:	(404)607-9981
<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>	
Phone:	4046079991
Email:	USPTOPATENTMAIL@CANTORCOLBURN.COM
Correspondent Name:	CANTOR COLBURN LLP
Address Line 1:	20 CHURCH STREET
Address Line 2:	22ND FLOOR
Address Line 4:	HARTFORD, CONNECTICUT 06103
ATTORNEY DOCKET NUMBER:	P201705738US02
NAME OF SUBMITTER:	TANMAY DHARMADHIKARI
SIGNATURE:	/tanmaydharmadhikari,#L0938/
DATE SIGNED:	10/02/2017
This document serves as an Oath/Declaration (37 CFR 1.63).	

DECLARATION (37 C.F.R. 1.63) FOR UTILITY PATENT APPLICATION USING AN APPLICATION DATA SHEET (37 C.F.R. 1.76) AND ASSIGNMENT

Title of Invention: **HARDWARE-EFFICIENT VARIATIONAL QUANTUM EIGENVALUE SOLVER FOR QUANTUM COMPUTING MACHINES**

As a below named and undersigned inventor, I hereby declare that:

This declaration is directed to the attached application, or (if following box is checked):

United States application or PCT international application number 15/720,577 filed on September 29, 2017.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I have reviewed and understand the contents of the application, including the claims.

I am aware of the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in 37 CFR Section 1.56.

Whereas, I (“ASSIGNOR”) have made certain inventions, improvements, and discoveries (herein referred to as the “Invention”) disclosed in the above-identified patent application and further identified by the IBM Docket Number provided above in the header of this document;

Whereas, International Business Machines Corporation (herein referred to as the “ASSIGNEE”), a corporation of New York having a place of business at Armonk, New York, desires to acquire, and I desire to grant to the ASSIGNEE, my entire worldwide right, title, and interest in and to the Invention and in and to any and all patent applications and patents directed thereto;

Now, therefore, for good and valuable consideration, the receipt and sufficiency thereof being hereby acknowledged, I hereby sell or have sold, assign or have assigned, and otherwise transfer or have transferred to the ASSIGNEE, its successors, legal representatives, and assigns, my entire worldwide right, title, and interest in and to the Invention, the above-identified United States patent application, and any and all other patent applications and patents for the Invention which may be applied for or granted therefor in the United States and in all foreign countries and jurisdictions, including all divisions, continuations, reissues, reexaminations, renewals, extensions, counterparts, substitutes, and extensions thereof, and all rights of priority resulting from the filing of such applications and granting of such patents. In addition, I hereby authorize and request the Director of the United States Patent and Trademark Office to issue any United States Patent, and foreign patent authorities to issue any foreign patent, granted for the Invention, to the ASSIGNEE, its successors, legal representatives, and assigns, my entire worldwide right, title, and interest in and to the same to be held and enjoyed by the ASSIGNEE, its successors, legal representatives, and assigns to the full end of the terms for which any and all such patents may be granted, as fully and entirely as would have been held and enjoyed by me had this Assignment not been made; and I agree to execute any and all documents and instruments and perform all lawful acts reasonably related to recording this Assignment or perfecting title to the Invention and all related patents and applications, in the ASSIGNEE, its successors, legal representatives, and assigns, whenever requested by the ASSIGNEE, its successors, legal representatives, or assigns.

I acknowledge my prior and ongoing obligations to sell, assign, and transfer my rights under this Assignment to the ASSIGNEE and am unaware of any reason why I may not have the full and unencumbered right to sell, assign, and transfer my rights hereby sold, assigned, and transferred, and have not executed, and will not execute, any document or instrument in conflict herewith. I also hereby grant the ASSIGNEE, its successors, legal representatives, and assigns, the right to insert in this Assignment any further identification (including, but not limited to, patent Application Number) which may be necessary or desirable for recordation of this Assignment. This Assignment is governed by the substantive laws of the State of New York, and any disputes will be resolved in a New York state court or federal court sited in New York.

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

(1) Legal Name of Inventor: **Antonio Mezzacapo**



Signature: _____ Date: 03-13-2019

(2) Legal Name of Inventor: **Jay M. Gambetta**

Signature: _____ Date: _____

(3) Legal Name of Inventor: **Abhinav Kandala**

Signature: _____ Date: _____

(4) Legal Name of Inventor: **Maika Takita**

Signature: _____ Date: _____

(5) Legal Name of Inventor: **Paul K. Temme**

Signature: _____ Date: _____

DECLARATION (37 C.F.R. 1.63) FOR UTILITY PATENT APPLICATION USING AN APPLICATION DATA SHEET (37 C.F.R. 1.76) AND ASSIGNMENT

Title of Invention: **HARDWARE-EFFICIENT VARIATIONAL QUANTUM EIGENVALUE SOLVER FOR QUANTUM COMPUTING MACHINES**

As a below named and undersigned inventor, I hereby declare that:

This declaration is directed to the attached application, or (if following box is checked):

United States application or PCT international application number _____
filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I have reviewed and understand the contents of the application, including the claims.

I am aware of the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in 37 CFR Section 1.56.

Whereas, I ("ASSIGNOR") have made certain inventions, improvements, and discoveries (herein referred to as the "Invention") disclosed in the above-identified patent application and further identified by the IBM Docket Number provided above in the header of this document;

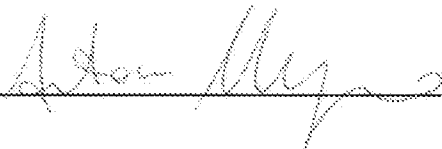
Whereas, International Business Machines Corporation (herein referred to as the "ASSIGNEE"), a corporation of New York having a place of business at Armonk, New York, desires to acquire, and I desire to grant to the ASSIGNEE, my entire worldwide right, title, and interest in and to the Invention and in and to any and all patent applications and patents directed thereto;

Now, therefore, for good and valuable consideration, the receipt and sufficiency thereof being hereby acknowledged, I hereby sell or have sold, assign or have assigned, and otherwise transfer or have transferred to the ASSIGNEE, its successors, legal representatives, and assigns, my entire worldwide right, title, and interest in and to the Invention, the above-identified United States patent application, and any and all other patent applications and patents for the Invention which may be applied for or granted therefor in the United States and in all foreign countries and jurisdictions, including all divisions, continuations, reissues, reexaminations, renewals, extensions, counterparts, substitutes, and extensions thereof, and all rights of priority resulting from the filing of such applications and granting of such patents. In addition, I hereby authorize and request the Director of the United States Patent and Trademark Office to issue any United States Patent, and foreign patent authorities to issue any foreign patent, granted for the Invention, to the ASSIGNEE, its successors, legal representatives, and assigns, my entire worldwide right, title, and interest in and to the same to be held and enjoyed by the ASSIGNEE, its successors, legal representatives, and assigns to the full end of the terms for which any and all such patents may be granted, as fully and entirely as would have been held and enjoyed by me had this Assignment not been made; and I agree to execute any and all documents and instruments and perform all lawful acts reasonably related to recording this Assignment or perfecting title to the Invention and all related patents and applications, in the ASSIGNEE, its successors, legal representatives, and assigns, whenever requested by the ASSIGNEE, its successors, legal representatives, or assigns.

I acknowledge my prior and ongoing obligations to sell, assign, and transfer my rights under this Assignment to the ASSIGNEE and am unaware of any reason why I may not have the full and unencumbered right to sell, assign, and transfer my rights hereby sold, assigned, and transferred, and have not executed, and will not execute, any document or instrument in conflict herewith. I also hereby grant the ASSIGNEE, its successors, legal representatives, and assigns, the right to insert in this Assignment any further identification (including, but not limited to, patent Application Number) which may be necessary or desirable for recordation of this Assignment. This Assignment is governed by the substantive laws of the State of New York, and any disputes will be resolved in a New York state court or federal court sited in New York.

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

(1) Legal Name of Inventor: Mezzacapo Antonio

Signature:  Date: 09/29/2017

(2) Legal Name of Inventor: Jay M. Gambetta

Signature:  Date: 09/30/2017

(3) Legal Name of Inventor: Abhinav Kandala

Signature:  Date: 09/29/2017

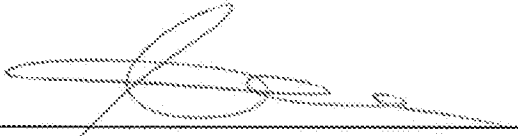
(4) Legal Name of Inventor: Maika Takita

Signature:  Date: 09/29/2017

[IF MORE INVENTORS, ADDITIONAL SIGNATURE PAGE(S) FOLLOWS]

(5) Legal Name of Inventor: Paul K. Temme

Signature: _____

A handwritten signature in black ink, appearing to read "Paul K. Temme", written over a horizontal dotted line.

Date: _____

09/29/2017



UNITED STATES PATENT AND TRADEMARK OFFICE

UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

OCTOBER 3, 2017

PTAS

CANTOR COLBURN LLP
20 CHURCH STREET
22ND FLOOR
HARTFORD, CT 06103

504575058

UNITED STATES PATENT AND TRADEMARK OFFICE
NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT

THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT RECORDATION BRANCH OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE ASSIGNMENT RECORDATION BRANCH AT 571-272-3350. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, MAIL STOP: ASSIGNMENT RECORDATION BRANCH, P.O. BOX 1450, ALEXANDRIA, VA 22313.

RECORDATION DATE: 10/02/2017

REEL/FRAME: 043753/0049
NUMBER OF PAGES: 5

BRIEF: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).

DOCKET NUMBER: P201705738US02

ASSIGNOR:

ANTONIO, MEZZACAPO

DOC DATE: 09/29/2017

ASSIGNOR:

GAMBETTA, JAY M.

DOC DATE: 09/30/2017

ASSIGNOR:

KANDALA, ABHINAV

DOC DATE: 09/29/2017

ASSIGNOR:

TAKITA, MAIKA

DOC DATE: 09/29/2017

ASSIGNOR:

TEMME, PAUL K.

DOC DATE: 09/29/2017

ASSIGNEE:

INTERNATIONAL BUSINESS MACHINES
CORPORATION
NEW ORCHARD ROAD
ARMONK, NEW YORK 10504

APPLICATION NUMBER: 15720577

FILING DATE:

PATENT NUMBER:

ISSUE DATE:

TITLE: HARDWARE-EFFICIENT VARIATIONAL QUANTUM EIGENVALUE SOLVER FOR
QUANTUM COMPUTING MACHINES

ASSIGNMENT RECORDATION BRANCH
PUBLIC RECORDS DIVISION