

Statement by Submitter

I, Zhenzhen Bao, of 21 Nanyang Link, Singapore 637371, do hereby declare that the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as PHOTON-Beetle, is my own original work, or if submitted jointly with others, is the original work of the joint submitters. I further declare that (check at least one of the following):

- I do not hold and do not intend to hold any patent or patent application with a claim which may cover the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as PHOTON-Beetle;
- to the best of my knowledge, the practice of the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as PHOTON-Beetle, may be covered by the following U.S. and/or foreign patents: none;
- I do hereby declare that, to the best of my knowledge, the following pending U.S. and/or foreign patent applications may cover the practice of my submitted cryptosystem, reference implementation or optimized implementations: none.

I do hereby acknowledge and agree that my submitted cryptosystem will be provided to the public for review and will be evaluated by NIST, and that it might not be selected for standardization by NIST. I further acknowledge that I will not receive financial or other compensation from the U.S. Government for my submission. I certify that, to the best of my knowledge, I have fully disclosed all patents and patent applications which may cover my cryptosystem, reference implementation or optimized implementations. I also acknowledge and agree that the U.S. Government may, during the public review and the evaluation process, and, if my submitted cryptosystem is selected for standardization, during the lifetime of the standard, modify my submitted cryptosystems specifications (e.g., to protect against a newly discovered vulnerability).

I acknowledge that NIST will announce any selected cryptosystem(s) and proceed to publish the draft standards for public comment I do hereby agree to provide the statements required by Sections 2.4.2 and 2.4.3, below, for any patent or patent application identified to cover the practice of my cryptosystem, reference implementation or optimized implementations and the right to use such implementations for the purposes of the public review and evaluation process.

I acknowledge that, during the lightweight crypto evaluation process, NIST may remove my cryptosystem from consideration for standardization. If my cryptosystem (or the derived cryptosystem) is removed from consideration for standardization or withdrawn from consideration by all submitter(s) and owner(s), I understand that rights granted and assurances made under Sections 2.4.1, 2.4.2 and 2.4.3, including use rights of the reference and optimized implementations, may be withdrawn by the submitter(s) and owner(s), as appropriate.

Signed: Zhenzhen Bao

Title: Doctor

Date: 15 Feb 2019

Place: Singapore

Statement by Reference/Optimized/Additional Implementations Owner(s)

I, Zhenzhen Bao, of 21 Nanyang Link, Singapore 637371, am the owner or authorized representative of the owner of the submitted reference implementation, optimized and additional implementations and hereby grant the U.S. Government and any interested party the right to reproduce, prepare derivative works based upon, distribute copies of, and display such implementations for the purposes of the lightweight cryptography public review and evaluation process, and implementation if the corresponding cryptosystem is selected for standardization and as a standard, notwithstanding that the implementations may be copyrighted or copyrightable.

Signed: *Zhenzhen Bao*

Title: *Doctor*

Date: *15 Feb 2019*

Place: *Singapore*

Statement by Submitter

I, Avik Chakraborti, of 3-9-11 Midori-cho, Musashino-shi, Tokyo 180-8585, do hereby declare that the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as PHOTON-Beetle, is my own original work, or if submitted jointly with others, is the original work of the joint submitters. I further declare that (check at least one of the following):

- I do not hold and do not intend to hold any patent or patent application with a claim which may cover the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as PHOTON-Beetle;
- to the best of my knowledge, the practice of the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as PHOTON-Beetle, may be covered by the following U.S. and/or foreign patents:
 - **SG patent no: 194203 “Devices for Computer-Based Generating of a Mixing Matrix for Cryptographic processing of Data, Encrypting Devices, Methods for Computer-Based Generating of a Mixing Matrix for Cryptographic Processing of Data and Encrypting Methods”**

- I do hereby declare that, to the best of my knowledge, the following pending U.S. and/or foreign patent applications may cover the practice of my submitted cryptosystem, reference implementation or optimized implementations: none.

I do hereby acknowledge and agree that my submitted cryptosystem will be provided to the public for review and will be evaluated by NIST, and that it might not be selected for standardization by NIST. I further acknowledge that I will not receive financial or other compensation from the U.S. Government for my submission. I certify that, to the best of my knowledge, I have fully disclosed all patents and patent applications which may cover my cryptosystem, reference implementation or optimized implementations. I also acknowledge and agree that the U.S. Government may, during the public review and the evaluation process, and, if my submitted cryptosystem is selected for standardization, during the lifetime of the standard, modify my submitted cryptosystems specifications (e.g., to protect against a newly discovered vulnerability).

I acknowledge that NIST will announce any selected cryptosystem(s) and proceed to publish the draft standards for public comment I do hereby agree to provide the statements required by Sections 2.4.2 and 2.4.3, below, for any patent or patent application identified to cover the practice of my cryptosystem, reference implementation or optimized implementations and the right to use such implementations for the purposes of the public review and evaluation process.

I acknowledge that, during the lightweight crypto evaluation process, NIST may remove my cryptosystem from consideration for standardization. If my cryptosystem (or the derived cryptosystem) is removed from consideration for standardization or withdrawn from consideration by all submitter(s) and owner(s), I understand that rights granted and assurances made under Sections 2.4.1, 2.4.2 and 2.4.3, including use rights of the reference and optimized implementations, may be withdrawn by the submitter(s) and owner(s), as appropriate.

Signed: Avik Chakraborti

Title: Dr.

Date: 4th March, 2019

Place: Tokyo, Japan

Statement by Submitter

I, Nilanjan Datta, of Indian Statistical Institute, 203 B.T.Road, Kolkata, India 700108, do hereby declare that the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as PHOTON-Beetle, is my own original work, or if submitted jointly with others, is the original work of the joint submitters. I further declare that (check at least one of the following):

- I do not hold and do not intend to hold any patent or patent application with a claim which may cover the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as PHOTON-Beetle;
- to the best of my knowledge, the practice of the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as PHOTON-Beetle, may be covered by the following U.S. and/or foreign patents:
 - **SG patent no: 194203 “Devices for Computer-Based Generating of a Mixing Matrix for Cryptographic processing of Data, Encrypting Devices, Methods for Computer-Based Generating of a Mixing Matrix for Cryptographic Processing of Data and Encrypting Methods”**
- I do hereby declare that, to the best of my knowledge, the following pending U.S. and/or foreign patent applications may cover the practice of my submitted cryptosystem, reference implementation or optimized implementations: none.

I do hereby acknowledge and agree that my submitted cryptosystem will be provided to the public for review and will be evaluated by NIST, and that it might not be selected for standardization by NIST. I further acknowledge that I will not receive financial or other compensation from the U.S. Government for my submission. I certify that, to the best of my knowledge, I have fully disclosed all patents and patent applications which may cover my cryptosystem, reference implementation or optimized implementations. I also acknowledge and agree that the U.S. Government may, during the public review and the evaluation process, and, if my submitted cryptosystem is selected for standardization, during the lifetime of the standard, modify my submitted cryptosystems specifications (e.g., to protect against a newly discovered vulnerability).

I acknowledge that NIST will announce any selected cryptosystem(s) and proceed to publish the draft standards for public comment I do hereby agree to provide the statements required by Sections 2.4.2 and 2.4.3, below, for any patent or patent application identified to cover the practice of my cryptosystem, reference implementation or optimized implementations and the right to use such implementations for the purposes of the public review and evaluation process.

I acknowledge that, during the lightweight crypto evaluation process, NIST may remove my cryptosystem from consideration for standardization. If my cryptosystem (or the derived cryptosystem) is removed from consideration for standardization or withdrawn from consideration by all submitter(s) and owner(s), I understand that rights granted and assurances made under Sections 2.4.1, 2.4.2 and 2.4.3, including use rights of the reference and optimized implementations, may be withdrawn by the submitter(s) and owner(s), as appropriate.

Signed: Nilanjan Datta

Title: Dr.

Date: 05/03/2019

Place: Kolkata, India

Statement by Submitter

I, Jian Guo, of 21 Nanyang Link, Singapore 637371, do hereby declare that the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as PHOTON-Beetle, is my own original work, or if submitted jointly with others, is the original work of the joint submitters. I further declare that (check at least one of the following):

- I do not hold and do not intend to hold any patent or patent application with a claim which may cover the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as PHOTON-Beetle;
- to the best of my knowledge, the practice of the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as PHOTON-Beetle, may be covered by the following U.S. and/or foreign patents: WO2012154129A1;
- I do hereby declare that, to the best of my knowledge, the following pending U.S. and/or foreign patent applications may cover the practice of my submitted cryptosystem, reference implementation or optimized implementations: none.

I do hereby acknowledge and agree that my submitted cryptosystem will be provided to the public for review and will be evaluated by NIST, and that it might not be selected for standardization by NIST. I further acknowledge that I will not receive financial or other compensation from the U.S. Government for my submission. I certify that, to the best of my knowledge, I have fully disclosed all patents and patent applications which may cover my cryptosystem, reference implementation or optimized implementations. I also acknowledge and agree that the U.S. Government may, during the public review and the evaluation process, and, if my submitted cryptosystem is selected for standardization, during the lifetime of the standard, modify my submitted cryptosystems specifications (e.g., to protect against a newly discovered vulnerability).

I acknowledge that NIST will announce any selected cryptosystem(s) and proceed to publish the draft standards for public comment I do hereby agree to provide the statements required by Sections 2.4.2 and 2.4.3, below, for any patent or patent application identified to cover the practice of my cryptosystem, reference implementation or optimized implementations and the right to use such implementations for the purposes of the public review and evaluation process.

I acknowledge that, during the lightweight crypto evaluation process, NIST may remove my cryptosystem from consideration for standardization. If my cryptosystem (or the derived cryptosystem) is removed from consideration for standardization or withdrawn from consideration by all submitter(s) and owner(s), I understand that rights granted and assurances made under Sections 2.4.1, 2.4.2 and 2.4.3, including use rights of the reference and optimized implementations, may be withdrawn by the submitter(s) and owner(s), as appropriate.

Signed: 

Title: Dr.

Date: 15 Feb 2019

Place: Singapore

Statement by Patent (and Patent Application) Owner(s)

I, Jian Guo, of 21 Nanyang Link, Singapore 637371, am the owner or authorized representative of the owner of the following patent(s) and/or patent application(s): WO2012154129A1, and do hereby commit and agree to grant to any interested party on a worldwide basis, if the cryptosystem known as PHOTON-Beetle is selected for standardization, in consideration of its evaluation and selection by NIST, a non-exclusive license for the purpose of implementing the standard (check one):

- without compensation and under reasonable terms and conditions that are demonstrably free of any unfair discrimination, OR
- under reasonable terms and conditions that are demonstrably free of any unfair discrimination. (confirmation letter from the patent owner legal office is attached.)

I further do hereby commit and agree to license such party on the same basis with respect to any other patent application or patent hereafter granted to me, or owned or controlled by me, that is or may be necessary for the purpose of implementing the standard. I further do hereby commit and agree that I will include, in any documents transferring ownership of each patent and patent application, provisions to ensure that the commitments and assurances made by me are binding on the transferee and any future transferee.

I further do hereby commit and agree that these commitments and assurances are intended by me to be binding on successors-in-interest of each patent and patent application, regardless of whether such provisions are included in the relevant transfer documents.

I further do hereby grant to the U.S. Government, during the public review and the evaluation process, and during the lifetime of the standard, a nonexclusive, nontransferable, irrevocable, paid-up worldwide license solely for the purpose of modifying my submitted cryptosystems specifications (e.g., to protect against a newly discovered vulnerability) for incorporation into the standard.

Signed:



Title:

Dr.

Date:

15 Feb 2019

Place:

Singapore

Statement by Reference/Optimized/Additional Implementations' Owner(s)

I, Jian Guo, of 21 Nanyang Link, Singapore 637371, am the owner or authorized representative of the owner of the submitted reference implementation, optimized and additional implementations and hereby grant the U.S. Government and any interested party the right to reproduce, prepare derivative works based upon, distribute copies of, and display such implementations for the purposes of the lightweight cryptography public review and evaluation process, and implementation if the corresponding cryptosystem is selected for standardization and as a standard, notwithstanding that the implementations may be copyrighted or copyrightable.

Signed:



Title:

Dr.

Date:

15 Feb 2019

Place:

Singapore

Statement by Submitter

I, Mridul Nandi, of Indian Statistical Institute, 203 B.T.Road, Kolkata, India 700108, do hereby declare that the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as PHOTON-Beetle, is my own original work, or if submitted jointly with others, is the original work of the joint submitters. I further declare that (check at least one of the following):

- I do not hold and do not intend to hold any patent or patent application with a claim which may cover the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as PHOTON-Beetle;
- to the best of my knowledge, the practice of the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as PHOTON-Beetle, may be covered by the following U.S. and/or foreign patents:
 - **SG patent no: 194203 “Devices for Computer-Based Generating of a Mixing Matrix for Cryptographic processing of Data, Encrypting Devices, Methods for Computer-Based Generating of a Mixing Matrix for Cryptographic Processing of Data and Encrypting Methods”**
- I do hereby declare that, to the best of my knowledge, the following pending U.S. and/or foreign patent applications may cover the practice of my submitted cryptosystem, reference implementation or optimized implementations: none.

I do hereby acknowledge and agree that my submitted cryptosystem will be provided to the public for review and will be evaluated by NIST, and that it might not be selected for standardization by NIST. I further acknowledge that I will not receive financial or other compensation from the U.S. Government for my submission. I certify that, to the best of my knowledge, I have fully disclosed all patents and patent applications which may cover my cryptosystem, reference implementation or optimized implementations. I also acknowledge and agree that the U.S. Government may, during the public review and the evaluation process, and, if my submitted cryptosystem is selected for standardization, during the lifetime of the standard, modify my submitted cryptosystems specifications (e.g., to protect against a newly discovered vulnerability).

I acknowledge that NIST will announce any selected cryptosystem(s) and proceed to publish the draft standards for public comment I do hereby agree to provide the statements required by Sections 2.4.2 and 2.4.3, below, for any patent or patent application identified to cover the practice of my cryptosystem, reference implementation or optimized implementations and the right to use such implementations for the purposes of the public review and evaluation process.

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Signed: M Nandi
Title: Mr.
Date: March 05, 2019
Place: Kolkata, India

Statement by Submitter

I, Thomas Peyrin, of 21 Nanyang Link, Singapore 637371, do hereby declare that the cryptosystem, reference implementation, or **optimized implementations** that I have submitted, known as **PHOTON-Beetle**, is my own original work, or if submitted jointly with others, is the original work of the joint submitters. I further declare that (check at least one of the following):

- I do not hold and do not intend to hold any patent or patent application with a claim which may cover the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as **PHOTON-Beetle**;
- to the best of my knowledge, the practice of the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as **PHOTON-Beetle**, may be covered by the following U.S. and/or foreign patents: SG patent no: 194203 "Devices for Computer-Based Generating of a Mixing Matrix for Cryptographic processing of Data, Encrypting Devices, Methods for Computer-Based Generating of a Mixing Matrix for Cryptographic Processing of Data and Encrypting Methods";
- I do hereby declare that, to the best of my knowledge, the following pending U.S. and/or foreign patent applications may cover the practice of my submitted cryptosystem, reference implementation or optimized implementations: none.

I do hereby acknowledge and agree that my submitted cryptosystem will be provided to the public for review and will be evaluated by NIST, and that it might not be selected for standardization by NIST. I further acknowledge that I will not receive financial or other compensation from the U.S. Government for my submission. I certify that, to the best of my knowledge, I have fully disclosed all patents and patent applications which may cover my cryptosystem, reference implementation or optimized implementations. I also acknowledge and agree that the U.S. Government may, during the public review and the evaluation process, and, if my submitted cryptosystem is selected for standardization, during the lifetime of the standard, modify my submitted cryptosystem's specifications (e.g., to protect against a newly discovered vulnerability).

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I acknowledge that, during the lightweight crypto evaluation process, NIST may remove my cryptosystem from consideration for standardization. If my cryptosystem (or the derived cryptosystem) is removed from consideration for standardization or withdrawn from consideration by all submitter(s) and owner(s), I understand that rights granted and assurances made under Sections 2.4.1, 2.4.2 and 2.4.3, including use rights of the reference and optimized implementations, may be withdrawn by the submitter(s) and owner(s), as appropriate.

Signed: 

Title: Dr

Date: 08/03/2019

Place: ~~FR~~ SINGAPORE

Statement by Patent (and Patent Application) Owner(s)

I, Thomas Peyrin, of 21 Nanyang Link, Singapore 637371, am the owner or authorized representative of the owner of the following patent(s) and/or patent application(s): SG patent no: 194203 "Devices for Computer-Based Generating of a Mixing Matrix for Cryptographic processing of Data, Encrypting Devices, Methods for Computer-Based Generating of a Mixing Matrix for Cryptographic Processing of Data and Encrypting Methods", and do hereby commit and agree to grant to any interested party on a worldwide basis, if the cryptosystem known as **PHOTON-Beetle** is selected for standardization, in consideration of its evaluation and selection by NIST, a non-exclusive license for the purpose of implementing the standard (check one):

- without compensation and under reasonable terms and conditions that are demonstrably free of any unfair discrimination, OR
- under reasonable terms and conditions that are demonstrably free of any unfair discrimination.

I further do hereby commit and agree to license such party on the same basis with respect to any other patent application or patent hereafter granted to me, or owned or controlled by me, that is or may be necessary for the purpose of implementing the standard. I further do hereby commit and agree that I will include, in any documents transferring ownership of each patent and patent application, provisions to ensure that the commitments and assurances made by me are binding on the transferee and any future transferee.

I further do hereby commit and agree that these commitments and assurances are intended by me to be binding on successors-in-interest of each patent and patent application, regardless of whether such provisions are included in the relevant transfer documents.

I further do hereby grant to the U.S. Government, during the public review and the evaluation process, and during the lifetime of the standard, a nonexclusive, nontransferable, irrevocable, paid-up worldwide license solely for the purpose of modifying my submitted cryptosystem's specifications (e.g., to protect against a newly discovered vulnerability) for incorporation into the standard.

Signed: 
Title: Dr
Date: 08/03/2019
Place: SINGAPORE

Statement by Reference/Optimized/Additional Implementations' Owner(s)

I, Thomas Peyrin, of 21 Nanyang Link, Singapore 637371, am the owner or authorized representative of the owner _ of the submitted **reference implementation**, optimized and additional implementations and hereby grant the U.S. Government and any interested party the right to reproduce, prepare derivative works based upon, distribute copies of, and display such implementations for the purposes of the lightweight cryptography public review and evaluation process, and implementation if the corresponding cryptosystem is selected for standardization and as a standard, notwithstanding that the implementations may be copyrighted or copyrightable.

Signed: 

Title: Dr

Date: 08/03/2019

Place: SINGAPORE

Statement by Submitter

I, Kan Yasuda, of 3-9-11 Midori-cho, Musashino-shi, Tokyo 180-8585, do hereby declare that the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as PHOTON-Beetle, is my own original work, or if submitted jointly with others, is the original work of the joint submitters. I further declare that (check at least one of the following):

- I do not hold and do not intend to hold any patent or patent application with a claim which may cover the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as PHOTON-Beetle;
- to the best of my knowledge, the practice of the cryptosystem, reference implementation, or optimized implementations that I have submitted, known as PHOTON-Beetle, may be covered by the following U.S. and/or foreign patents:
 - **SG patent no: 194203 “Devices for Computer-Based Generating of a Mixing Matrix for Cryptographic processing of Data, Encrypting Devices, Methods for Computer-Based Generating of a Mixing Matrix for Cryptographic Processing of Data and Encrypting Methods”**
- I do hereby declare that, to the best of my knowledge, the following pending U.S. and/or foreign patent applications may cover the practice of my submitted cryptosystem, reference implementation or optimized implementations: none.

I do hereby acknowledge and agree that my submitted cryptosystem will be provided to the public for review and will be evaluated by NIST, and that it might not be selected for standardization by NIST. I further acknowledge that I will not receive financial or other compensation from the U.S. Government for my submission. I certify that, to the best of my knowledge, I have fully disclosed all patents and patent applications which may cover my cryptosystem, reference implementation or optimized implementations. I also acknowledge and agree that the U.S. Government may, during the public review and the evaluation process, and, if my submitted cryptosystem is selected for standardization, during the lifetime of the standard, modify my submitted cryptosystems specifications (e.g., to protect against a newly discovered vulnerability).

I acknowledge that NIST will announce any selected cryptosystem(s) and proceed to publish the draft standards for public comment I do hereby agree to provide the statements required by Sections 2.4.2 and 2.4.3, below, for any patent or patent application identified to cover the practice of my cryptosystem, reference implementation or optimized implementations and the right to use such implementations for the purposes of the public review and evaluation process.

I acknowledge that, during the lightweight crypto evaluation process, NIST may remove my cryptosystem from consideration for standardization. If my cryptosystem (or the derived cryptosystem) is removed from consideration for standardization or withdrawn from consideration by all submitter(s) and owner(s), I understand that rights granted and assurances made under Sections 2.4.1, 2.4.2 and 2.4.3, including use rights of the reference and optimized implementations, may be withdrawn by the submitter(s) and owner(s), as appropriate.

Signed: *Kan Yasuda*
Title: *Dr.*
Date: *March 04, 2019*
Place: *Tokyo, Japan*



I, Lim Jui, of 71 Nanyang Drive, #03-01 NTU Innovation Center S638075, am the authorized representative of the owner Nanyang Technological University of the following patent: **SG patent No: 194203 "Devices for Computer-Based Generating of a Mixing Matrix for Cryptographic Processing of Data, Encrypting Devices, Methods for Computer-Based Generating of a Mixing Matrix for Cryptographic Processing of Data and Encrypting Methods"**, and do hereby commit and agree to grant to any interested party on a worldwide basis, if the cryptosystem known as "PHOTON-Beetle" is selected for standardization, in consideration of its evaluation and selection by NIST, a non-exclusive license for the purpose of implementing the standard (check one):

- without compensation and under reasonable terms and conditions that are demonstrably free of any unfair discrimination, OR
- under reasonable terms and conditions that are demonstrably free of any unfair discrimination.

I further do hereby commit and agree to license such party on the same basis with respect to any other patent application or patent hereafter granted to me, or owned or controlled by me, that is or may be necessary for the purpose of implementing the standard.

I further do hereby commit and agree that I will include, in any documents transferring ownership of each patent and patent application, provisions to ensure that the commitments and assurances made by me are binding on the transferee and any future transferee.

I further do hereby commit and agree that these commitments and assurances are intended by me to be binding on successors-in-interest of each patent and patent application, regardless of whether such provisions are included in the relevant transfer documents.

I further do hereby grant to the U.S. Government, during the public review and the evaluation process, and during the lifetime of the standard, a nonexclusive, nontransferable, irrevocable, paid-up worldwide license solely for the purpose of modifying my submitted cryptosystem's specifications (e.g., to protect against a newly discovered vulnerability) for incorporation into the standard.

Signed:  **Dr. Lim Jui**
Chief Executive Officer
Nanyang Technological University - NTUitive Pte. Ltd.

Title: CEO, NTUitive Pte Ltd

Date: 11 FEB 2019

