

MEMORANDUM OF UNDERSTANDING

IZEST and INRS collaboration towards Exawatt science

This Memorandum Of Understanding (MOU) concerning a collaboration between the International center on Zetta-Exawatt Science and Technology (IZEST) and the Institut National de la Recherche Scientifique (INRS) towards Exawatt science is made on the 14th of May 2012 (hereinafter referred to as the "EFFECTIVE DATE), by and between:

ECOLE POLYTECHNIQUE, a French public organisation, having its address at Route de Saclay, 91120 Palaiseau, France, (hereinafter referred to as "EP") represented by Mr. Xavier MICHEL acting as General Director of Ecole Polytechnique and duly authorised for the purposes hereof,

(hereinafter "EP")

The **COMMISSARIAT A L'ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES**, a French government-funded technological Research Organisation having its headquarters located at « Bâtiment Le Ponant D – 25 rue Leblanc 75015 Paris France» (hereinafter referred to as « CEA ») represented by Mr Daniel VERWAERDE acting as Director of CEA-Military Applications and duly authorized for the purpose hereof,

(hereinafter "CEA")

INSTITUT NATIONAL DE LA RECHERCHE SCIENTIFIQUE, a legal person created by letters patent pursuant to the *Act respecting the Université du Québec* (R.S.Q., c. U-1), with its head office at 490 de la Couronne Street, Québec City, Québec, Canada, G1K 9A9, (hereinafter referred to as "INRS") represented by Daniel Coderre, Director General , duly authorized for the purposes hereof.

(hereinafter "INRS")

(Polytechnique, CEA or INRS individually each referred to as a "Party" and collectively as the "Parties").

WHEREAS for more than 40 years, EP has been a key player in the laser field with its laboratories : LULI – *Laboratoire d'Utilisation des Lasers Intenses* – (suppression of fast electrons by frequency doubling, detailed analysis of plasma instabilities, particle acceleration), LOA – *Laboratoire d'Optique Appliquée* – (particle acceleration) and more recently ILE – *Institut de la Lumière Extrême* – which has advanced Extreme Light work in France and in Europe through the ELI program.

WHEREAS since the first laser demonstrations over 50 years ago, CEA has played a pioneering role in the field of laser-matter interaction including through the demonstration of the first neutron and Chirped Pulses Amplification (CPA) concept on a large laser chain (P102).

WHEREAS IZEST is the first international centre to dedicate efforts to the exploration of fundamental physics founded on laser-matter interactions in the regime beyond Exawatt. It will be based on a new amplifier concept (C3 for Cascaded Conversion Compression):

WHEREAS for the purposes of this MOU EP and CEA act in their own name and in the name of the International center on Zetta-Exawatt Science and Technology (hereinafter referred to as the “IZEST”) designed at the initiative of two laboratories (one from the Research Centre of EP and one from the CEA, the Centre d’Études Scientifiques et Techniques d’Aquitaine (CESTA)), directed by Pr. Gérard MOUROU.

WHEREAS IZEST has an international vocation and wishes to partner with appropriate international laboratories such as the INRS –ALLS (Advanced Laser Light Source) to form a consortium capable of entering international competitions for resources to support research projects beyond Exawatt science.

WHEREAS INRS is a University dedicated to fundamental and applied research, graduate studies and the training of researchers in its four Research Centres. Part of the *Université du Québec* network, INRS University ranks first in Canada in terms of research intensity. For over 40 years it has contributed to science and training of highly qualified students in various fields including optics and laser science.

WHEREAS over the years, INRS has developed its activities through its collaborations and its national and international partnerships with the private, public and university sectors;

WHEREAS IZEST and INRS have strong shared interests in laser-matter interactions in the high intensity regime.

WHEREAS IZEST has considerable know-how in the field of high power ultrafast lasers, its conception and their applications.

WHEREAS INRS has considerable know-how in the field of applications of high power ultrafast lasers.

WHEREAS IZEST and INRS wish to explore the possibility of joining their efforts in order to contribute to the definition of the “Roadmap of the next generation of high intensity lasers” (hereinafter referred to as the “PROJECT”), and to take part in the identification of new paradigms based on Extreme Light,

NOW THEREFORE THE PARTIES AGREE AS FOLLOWS:

DEFINITIONS

In this MOU, and its annexes, words or expressions set out in capital letters, shall have the following meanings or the meanings ascribed thereto elsewhere in the text, unless the context clearly requires otherwise:

AUTHORIZED PURPOSE means in relation to Confidential information, the use of such Information for the purpose of the setting up within the next year the PROJECT towards Exawatt science.

BACKGROUND ASSETS means the information, and intellectual property and rights which are held, acquired, owned or controlled by each Party outside this MOU, whether prior to, simultaneously with or, developed for the first time within the context of separate research work or collaborations carried out after the conclusion of this MOU and outside the purview of this MOU or any research projects or collaborations governed by it or by any agreement which supersedes or replaces it, or including copyrights or other intellectual property rights pertaining to such information, intellectual property and rights following applications for, or the issue of patents and any other title to industrial property

CONFIDENTIAL INFORMATION means any non public information relating to PROJECT work which is disclosed by one Party to another in physical form and which is clearly designated, labelled or marked as “confidential” or in a similar matter, including but not limited to know-how, inventions, unpublished results including intellectual property rights relating thereto, and any other business and technical information disclosed in carrying out PROJECT work. Information disclosed orally during PROJECT work shall also be considered as confidential if it was identified as confidential at the time of disclosure and if summarized in writing within 30 days after disclosure.

KNOWLEDGE means the results, including information, know-how, works which are subject to copyright, and inventions, arising for the first time from work carried out within the Project governed by this MOU, whether or not they can be protected, as well as copyrights or rights pertaining to all the foregoing following applications for the recognition of or the protection of rights in relation to same, including the issue of patents, designs, or similar forms of protection.

1 PURPOSE

This MOU defines:

- the overall scope of the PROJECT,
- the framework for the main terms of the cooperation between the Parties,
- the schedule of exchanges to put the collaboration in place,
- the conditions under which confidential information shall be treated.

2 OVERALL SCOPE OF THE PROJECT

By signing this MOU the Parties agree to set up within the next year, a French-Canadian collaboration (hereinafter referred to as the PROJECT) towards Exawatt science.

The main goal of the interaction between IZEST and INRS will be to contribute to the definition of the "Roadmap of the next generation of high intensity lasers" and to facilitate scientific and technical coordination among members of the international scientific community eager to discover new paradigms based on extreme high intensity lasers. New types of lasers will be designed or developed to achieve the desired objectives. Particular attention will be devoted to the fundamental physics of high energy particles and strong fields and to the development of very high intensity lasers.

The ALLS 200TW laser at INRS will allow the study of upstream laser concepts before implementation in larger scale facilities including the CEA-CESTA facilities (close to Bordeaux). One specific objective with the ALLS 200TW system will be the Study of Plasma Optics.

3 INTELLECTUAL PROPERTY

3.1 BACKGROUND ASSETS

Each Party is and remains the sole owner of its BACKGROUND ASSETS.

3.2 KNOWLEDGE

The rules as to ownership, commercial use rights, academic use rights and the dissemination of KNOWLEDGE shall be defined on a case by case basis in specific future agreements between the Parties, which will be put in place by the Parties on a research project-by- research project basis in specific contracts, subject to the approval of each Party's representatives and any other approval which must be obtained.

4 FINANCIAL PROVISIONS

This MOU does not provide for any payments by any Party to any other Party Each Party shall bear its own costs and expenses, if any, for any necessary actions to be taken to fulfil this MOU, notably the travel expenses of its staff.

5 SCHEDULE

The Parties will make their reasonable best efforts within the next twelve months to set up the cooperation it being agreed that particular emphasis will be placed on discussion of milestones and timetables before the collaboration starts.

6 CONFIDENTIAL INFORMATION AND COMMUNICATION

6.1 CONFIDENTIAL INFORMATION

6.1.1. A recipient of CONFIDENTIAL INFORMATION shall:

- not use CONFIDENTIAL INFORMATION or allow it to be used for any purpose other than the setting up within the next year the PROJECT towards Exawatt science (the "AUTHORIZED PURPOSE"),
- not disclose CONFIDENTIAL INFORMATION to any third Party without the prior consent of the disclosing party,
- restrict dissemination of CONFIDENTIAL INFORMATION to only those employees and contractors who need to know for the AUTHORIZED PURPOSE in accordance with this MOU and which are subject to confidentiality obligations substantially identical to those of this MOU,

- safeguard against disclosure of CONFIDENTIAL INFORMATION by using the same degree of care as it uses for its own information of like importance, but no less than use reasonable care, ,
- use CONFIDENTIAL INFORMATION solely for the AUTHORIZED PURPOSE.

6.1.2 However, the provisions of article 6.1.1 shall not apply to information for which the receiving party can prove in writing that:

- such information is or has become publicly known through no wrongful act on its part ; or
- such information is available to the public or already known to the receiving party at the time of disclosure by the disclosing party ; or
- such information was rightfully received by the receiving party from a third party without breach of the present article or any confidentiality obligation; or
- such information was independently developed or discovered by the receiving party without use of a disclosing Party's CONFIDENTIAL INFORMATION; or
- CONFIDENTIAL INFORMATION is required to be disclosed to comply with applicable laws or regulations, or with a court or administrative order, provided that the disclosing party receives reasonable prior written notice of such disclosure.

6.1.3. Nothing in this MOU shall affect the ownership of any CONFIDENTIAL INFORMATION therein which each Party makes available to the other under this MOU or any intellectual property rights associated therewith, and no right, title or license, express or implied, over the CONFIDENTIAL INFORMATION or any intellectual property rights associated therewith is granted by the disclosing Party to the receiving Party for any purpose, other than the AUTHORIZED PURPOSE during the term of this MOU.

6.1.4 The obligations set out in article 6.1.1 shall survive expiry or earlier termination of this MOU for a period of five (5) years.

6.2 COMMUNICATION

In accordance with the provisions relating to confidentiality under the MOU, any proposed communication or publication related to the PROJECT by a Party shall be subject to the prior approval of the other Parties and shall be submitted to the other Parties no later than fifteen days before the anticipated submission of such proposed communication or publication to the publishing organisation. The absence of an answer or objection from all the other Parties within the fifteen days shall be construed as consent to the dissemination of the proposed communication or publication.

7 EFFECTIVE DATE – DURATION

7.1 Notwithstanding the date on which it is signed this MOU shall have the first above-mentioned EFFECTIVE DATE of May 14, 2012 and shall expire after one year unless expressly superseded by a further agreement between the Parties, the approval of which is subject to the approval of each Party's representatives and any other approval which must be obtained.

- 7.2 Each Party hereto may unilaterally terminate this Agreement upon prior notice of three months. This Agreement may also be rescinded by mutual consent by the Parties. No compensation of any kind shall be payable by any Party to any other Party in relation to the foregoing.
- 7.3 The provisions of articles 3 and 6 of this MOU shall remain in full force and effect for their own durations from the expiration or the earlier termination of this MOU.
- 7.4 Upon expiration or earlier termination of this MOU, and immediately upon request from the disclosing party, the receiving party undertakes to return all tangible copies of CONFIDENTIAL INFORMATION received. In case it would not be possible, the receiving party shall provide a declaration certifying the destruction of such copies of CONFIDENTIAL INFORMATION, pursuant to the written request of the disclosing party.

8 GOVERNING LAW – DISPUTES

- 8.1. This MOU shall be governed by and construed in accordance with the laws of France.
- 8.2. In the event that a dispute arises in connection with this MOU that is not resolved amicably by the Parties, proceedings in relation to such a dispute shall be submitted to the exclusive jurisdiction of the Courts of Paris, France.

9 MISCELLANEOUS

- 9.1. No failure to exercise or delay in the exercise of any right which the Parties may have, under this MOU or in connection with it, shall operate as a waiver thereof, nor shall any total or partial exercise of any such right prevent from any further or other exercise thereof or of any other such right.
- 9.2. In the event any one of the provisions of the MOU is held to be unenforceable under applicable law:
- such unenforceability shall not affect any other provision of the MOU; and
 - the MOU shall be construed as if said unenforceable provision had not been contained herein; and
 - the Parties shall discuss in good faith to replace the unenforceable provision with an enforceable provision, which has the effect nearest to that of the provision being replaced.
- 9.3. The Parties shall not amend this MOU except in writing.
- 9.4. Except as otherwise provided for in this MOU, none of the Parties shall assign or transfer any right acquired, granted, transferred or imparted to it hereunder to any third party, firm or corporation without the prior written consent of the other Party, which consent shall not be unreasonably withheld or delayed.

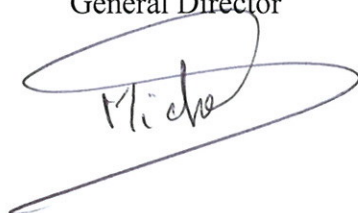
9.5. The Parties to this MOU shall remain independent contractors. Nothing contained in this MOU shall be construed or interpreted as a joint venture or agency relationship among the Parties.

IN WITNESS WHEREOF, the Parties have caused this MOU to be duly executed by their respective officers or representatives.

Made in three original copies,


For the **ECOLE POLYTECHNIQUE**

Name M. Xavier MICHEL
Position General Director
Date
Signature



For the **CEA**

Name Daniel VERWAERDE
Position Director of CEA/DAM
Date 10.05.2012
Signature

Le Directeur des applications militaires

D. VERWAERDE

For the **Institut national de la recherche scientifique**

Name M. Daniel CODERRE
Position General Director
Date
Signature

