

**RESOLUTION OF THE DIRECTOR OF THE CONSORTIUM FOR THE DESIGN, CONSTRUCTION, EQUIPMENT AND EXPLOITATION OF THE SPANISH PULSED LASERS CENTER (CLPU), DATED 30 MARCH 2017, IN WHICH THE REGULATORY BASES OF THE FIRST CALL FOR ACCESS TO THE VEGA LASER SYSTEM ARE APPROVED.**

## **1 Aim of the Call**

The following terms aim to regulate the conditions for the access of researchers from Spanish or foreign institutions, whether public or private, to the VEGA Laser System, to develop scientific experimental proposals and public or public-private collaborative projects, as well as the beam time allocation to the aforementioned.




To this end, the CLPU will consider as scientific experimental proposals those whose results may be published and disseminated, thus becoming part of scientific literature.

Similarly, the CLPU will consider as public or public-private collaborative projects those resulting from an agreement signed by the CLPU and other public or private institutions for the development of an experiment of common interest for both parties.

Those applications containing commercial or industrial proposals in which the participating researchers will use the results in a confidential manner, thus not willing to publish and disseminate the achieved results in scientific literature due to commercial purposes will be excluded from this call for access. In such cases, an appropriate contract will have to be signed with the CLPU.

## **2 Eligibility criteria**

From a general standpoint, the requirements that should be matched by applicants are:

-  Applicants must be researchers and/or technologists with experience in experimental campaigns that develop their work in a technology institute, or in a scientific or academic institution, either national or international. If this requirement is not met, an appropriate collaboration agreement with the CLPU may be signed, as indicated in the previous section.
-  By submitting the application, the terms of the call are accepted by all the participants, who thus commit to submit all the required documents for a correct evaluation of the application.
-  The applications shall be submitted in English.

### 3 Offered Access

VEGA-2 has performed its first commissioning experiments throughout 2016. This is the first Call for Competitive Access and, therefore, what is offered is limited.

We offer:

#### Laser Beam:

- The VEGA-2 beam with its F13 long-focus system (parabolic mirror with a focal of 130 cm). The laser beam is linearly polarized (electric field with horizontal polarization). This is a tried and tested system.
- Also, there is an F4 short focal system (focal distance of 40 cm) that is available, alas less tested.
- The essential parameters of the VEGA-2 laser are duration 35 fs, 4.5 J maximum power at the exit of the compressor, 130 TW. The laser shares front-end with the PW and the offered parameters are optimized for the PW. The stability of energy is of a 2 % RMS.
- In duly justified cases, there is the possibility of optimizing the VEGA-2 line by unbalancing the PW and thus increasing the power of the VEGA-2 line. It is possible to reach 28fs.
- It is a CPA titanium:sapphire system, with a central wavelength of 800 nm +/- 10 nm.
- Depending on the experimental set-up, it is reasonable to have more than 3 J in focus per shot. It can shoot a single shot or at 10 Hz.
- The front-end has a double CPA as well as an XPW system that increases the contrast of the pulses significantly, making it suitable for high density targets. The temporary contrast is: @ns (replica)  $5 \cdot 10^{-10}$ ; @1 ps  $2 \cdot 10^{-5}$ ; @5 ps  $5 \cdot 10^{-8}$ ; @10 ps  $8 \cdot 10^{-9}$ ; @100 ps  $5 \cdot 10^{-12}$ .
- There is also the possibility of by-passing the focus system so as to work with an unfocused compressed beam at 30 fs and approximately 10 cm of diameter.
- It is also possible to stretch the beam, in which case every shot may reach up to 6 J.
- The CLPU is also open to other feasible VEGA-2 configuration proposals, such as pump-probe, etc.

#### Experimental station:

- A cylindrical vacuum chamber of 120 cm in diameter that surrounds the focal point. The chamber is set so that the focal point remains 30 cm before the TTC (Target Chamber Centre). This chamber is in a vacuum of  $10^{-6}$  millibar. The cylindrical vacuum chamber has a series of windows apt for the connection of a detection system, or a line of work or sight. Detailed information may be requested to the CLPU.
- Possibility of additional vacuum chambers, typically of 610 in diameter.
- Fixing and positioning systems for solid targets for experiments with high density targets.
- Fixing and positioning systems for gas valves pulsed for targets of low density.
- Additionally, it is also possible that users prefer to come with their own experimental chamber. This is subject to requirements, that must previously and individually be discussed with the CLPU.

### Detection and measurement systems:

- The center has basic detection equipment, that to this date counts with an XUV detection chamber and optical detection chambers.
- Passive detection systems for loaded particles, such as CR38 and RCF, of scintillators associated to optical chambers, are also available.
- Calibrated 1.2 Tesla magnet.
- Kirkpatrick-Baez X-ray microscope, developed in collaboration with the University of Alberta.
- As the detection equipment is limited, the CLPU will try to facilitate the adaptation of the detection equipment that users may bring.
- Also, the center counts with characterization equipment in the laser area: temporary (wizzler, sequoia), wavefront (Phasics), potentiometer, spectrometer, spatial profile analysis chamber, oscilloscopes, photodiodes.

### Vacuum:

- Due to the requirements of the CPA compressors, VEGA functions in high vacuum  $10^6$  mb and with very strict cleanliness requirements so as to avoid chemical contamination (especially from hydrocarbons). Any equipment that the users may install must comply with these requirements. The CLPU will provide with the necessary vacuum elements and will perform the validation of the given elements that may pose a problem.

### Other services:

- The center has a mechanical workshop where elements required for each experimental campaign may be made.
- The center has a SEM microscope, and a conventional optical microscope.
- The center has other minor lasers (GW peak power), one of them is CEP-stabilised, and able of lows of a duration of 5 fs. They can be used for preliminary tests. They cannot be used in a pump-probe configuration with VEGA.

### Safety:

- The target area is a bunker that complies with the IRA 3254 (Radioactive Authorized Facility) authorized by the Spanish Nuclear Safety Council (CSN). The center has the control elements necessary so as to guarantee the safety in this respect. The license covers experiments involving high-energy photons, electrons, protons and other heavier ions. This initial call excludes experiments involving a significant number of neutrons or unstable isotopes. When appropriate (when given the role of Target Area Operator) external users will bring their own personal passive dosimeter, as according to the centers radiological safety regulations.
- Laser safety and personal protection gear (essentially goggles).
- The center will provide users with training related to safety, and may request proof of their previous laser safety experience when appropriate.

### Human resources:

- The center has a highly-specialized scientific and technical staff. Users will exclusively work in the target area or its control area, never in the laser room. The laser will only be operated by specialized personnel of the CLPU. The parameters of the laser will be previously discussed with the laser personnel.
- A wide array of users is considered, ranging from those highly specialized (credited as Target Area Operator) that will work under the supervision of a scientist of the center, to collaborators that will need a scientific support team. Exceptionally, and as long as it has been previously discussed and coordinated with the personnel of the CLPU, it is also possible to develop experimental sessions remotely, without the presence of any external scientist.
- The center will also provide with information and logistic support to the users. The travel and living expenses must be borne by the users.
- The personnel of the center will be responsible for the safety training of the users, issuing the appropriate permissions to each depending on their previous training as well as the received in the center.

### Funding:

- The existence of funding for the development of the experimental campaign will be proved. Otherwise, and exceptionally during this call, you may apply for an exemption of the access fees that will only cover for the time of use of the VEGA laser system beam, the use of the existing scientific and technological equipment and the support human resources for science, technology and logistics. When the experiment requires complex adaptations, additional consumables, etc., this will have to be previously discussed with the center. Also, and upon previous discussion, there is the possibility of in kind contributions.

## 4 Deadline for the submission of the proposal

The term for the submission of the proposals will start on the **1st of April, 2017** and will be open during the rest of the year. The first rating and shift assignation will include the proposals submitted before the **30<sup>th</sup> of June, 2017**. If the offered beam time quota is met before the end of the year, the call will be closed.

The **Local Coordinator** (Experiment supervisor) that acts as liaison between applicants and the center for this campaign is **Professor Luca Volpe (vegaservice@ccpu.es)**. It is advisable to contact the Local Coordinator before submitting the proposal so as to check the feasibility of the development of the proposal in the CLPU and so as for the user to receive orientation about the submission, if necessary. This type of experiments is very complex and has very varied characteristics, so this previous dialogue is crucial to optimize the feasibility of the proposals.

## 5 Access period

The experimental proposals received during this call will be executed in the access cycle<sup>1</sup> that ranges from **October 2017 to October 2018**, tentatively.



In this call 100 experimental sessions are offered<sup>2</sup>.

## 6 How to submit the proposal and documents to be furnished<sup>3</sup>

Both applicants as well as any researcher that may participate in the experiment will have to **sign up in the Facility Access Request On-line (FARO) system**, that may be accessed by users in the website of the CLPU ([www.clpu.es](http://www.clpu.es)).

The researcher in charge or submitting the proposal will have to complete the **access request form** that is found in the FARO application.

Additionally, the following documents will be submitted:

-  Accreditation of experience of the participants in the experiment.
-  Any other requested documentation for the correct evaluation of the proposal.

## 7 Evaluation boards and access criteria

All proposals will be firstly reviewed by the **Internal Committee** (formed by scientific and technological personnel of the CLPU). The Internal Committee will check if the development of the experimental proposal is feasible in the center, taking into account the following criteria:

- Technical feasibility
- Resource availability
- Safety and radiological protection aspects associated to the experiment

Then, the **Access Committee** will evaluate the scientific and technical quality of the experiment and will organize the distribution of beam time and the order of the experiments so that the resources of the Center are optimized. This board is formed by five members, where two are staff or adjoint to the CLPU (scientific and technological personnel) and three external members, that ensure the impartiality of the assignation.

The Access Committee will meet once every trimester to evaluate the received applications in that term, but for those that have previously been positively evaluated by other entities from which they have received funding, and for which their relevance against others evaluated by the Access Committee will have to be established.

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<sup>1</sup> Access Cycle: period of access covered by each call

<sup>2</sup> Experimental Sessions (or Shifts): one session equals 1 work shift (8 hours).

<sup>3</sup> All the information submitted by the applicants will be firstly reviewed by the Local Coordinator, who will check that the information submitted by the users is complete and is sufficient for both the Internal Committee as well as the Access Committee to perform their respective evaluations.

The criteria for selection followed by the Access Committee and their percentage on the final score are the following:

<b>GENERAL EVALUATION CRITERIA</b>	
<b>Scientific Quality</b> (This percentage will be the sum of the two following)	<b>50 %</b>
<b>Quality and originality of the project &amp; research plan</b> Scientific-technical relevance in comparison to other applications received Innovative & relevant objectives in comparison to the state-of-the-art knowledge Planning, experimental arrangements & working plan adequate to the project objectives	<b>30 %</b>
<b>Researchers &amp; collaborators scientific or academic excellence</b> IP & research team capacity to carry out the programmed activities Previous results & recent contributions to the research team on the project field Expected scientific-technical contributions of the research team to the project	<b>20 %</b>
<b>Potential Impact</b> Contribution to the scientific community Social, economic or industrial importance of expected results Impact to the participants (competitiveness, growth, employment) Existence of an adequate & sufficient plan for dissemination and transfer of results Chances of exploitation of results (intellectual property, patents)	<b>20 %</b>
<b>Talent Promotion</b> Complementary research team & coordination benefits New researcher involvement First access to the CLPU of researchers Participation of international researchers	<b>15 %</b>
<b>SPECIFIC EVALUATION CRITERIA</b>	<b>15 %</b>
<b>Criterion 1</b> Beam time assignation to industrial proposals or groups of European IPs	5 %
<b>Criterion 2</b> Transfer of knowledge to the CLPU	5 %
<b>Criterion 3</b> Exceptional results in previous campaigns	5 %

If during the evaluation of the proposals by the Access Committee any question that cannot be settled by this committee due to its scientific level arises, the question will be transferred to the Scientific and Technical Advisory Committee of the CLPU.

The Access Committee will assign a tentative order to the proposals, recommending a number of experimental sessions. Proposals that have already been evaluated and financed by external institutions will be given priority, as long as the Access Committee deems their scientific interest proven as compared to other evaluated proposals.

The Access Committee will propose the Director a reasoned and prioritized list of applications, based on their scientific and technical quality. The Director will decide the authorized accesses.

## **8 Notification of Evaluation and Resolution results**

Applicants will receive via email the final result of the evaluation of their experimental proposal, including its score and the number of experimental sessions awarded, if any. Applicants whose proposals have been accepted will have to confirm their acceptance within 15 days since the notification was sent, and submit the authorization to participate in the experiment issued by their center of provenance.

If the confirmation by the applicant does not meet the deadline, the experimental sessions will be assigned to a different proposal from the waiting list.

The Resolution of concession by the Director of the CLPU, that will put an end to the administrative proceeding, shall be issued in a maximum period of six months from the submission of the online applications, and will divide the scientific proposals in the following categories:




- A (Approved)
- B (Waiting List)
- C (Not approved – Minor scientific interest)
- D (Not approved – Inviabile)

The sum of all recommended sessions in the A (Approved) applications must be equal or less than the number of offered experimental sessions. This resolution with the lists (approved, waiting list and not approved applications) and their ranking will be published in the website of the CLPU, maintaining the confidentiality of sensitive information. As about the applications ranked as B, since they are considered of high scientific interest, the center will study the reasons why they were not prioritized and may make recommendations to the applicant so that the proposal is submitted again in the next call for access.

An appeal for reconsideration against the resolution to the Director of the CLPU may be lodged within a month from the issuance of the Resolution. Also, a contentious administrative appeal may be lodged against the resolution before the contentious administrative court of Salamanca, within 2 months of the issuance of the Resolution. If an appeal for reconsideration against the resolution is lodged, it will not be possible to lodge a contentious administrative appeal until the appeal for reconsideration is resolved, or dismissed.

## 9 Documentation and Training before accessing the CLPU







Previous to the beginning of the experimental campaign, all those that will participate in person in the development of the experimental proposals, will provide with the following documentation:

-  Authorizations of the institutions of provenance of all the participants in the experiment.
-  Proof of insurance through personal liability and accident insurance during the stay in the CLPU.
-  Medical fitness certificate issued in the last six months.

Also, they will complete and pass the safety training required by the CLPU.

## 10 Acceptance of the conditions by the admitted researchers

All the researchers that will participate in the approved experimental campaigns acquire the following commitments to:

-  Fill in the quality questionnaire at the end of the service.
-  Submit a report about the experiment developed once it has finished, within an agreed deadline. In the report, the number assigned to the proposal will appear.
-  Acknowledge the participation of the CLPU in the results, co-authorship or use of the facilities of the CLPU, as the case may be.
-  Communicate the publications derived by the works developed in the CLPU.
-  Authorize the CLPU to publish the subject of their research. You could be asked for additional information (e.g. images, graphics, presentations, etc.) so as to disseminate the results of the experiment (e.g. annual report, newsletter, web, etc.).
-  In the cases of projects funded by external institutions that require the completion of a signed satisfaction form, which confirms that the experiments have been developed in the facilities of the CLPU, submit a copy to the Center.

Failing to comply with the acquired commitments may comprise the impossibility of presenting new scientific proposals for the access to the different services offered by the CLPU for a period of two years.

Salamanca, 30<sup>th</sup> March, 2017



Luis Roso  
Director