

March 22nd, 2011

PERSONNEL CONTRACTS WITH CPAN PARTIAL FINANCIAL SUPPORT

The CPAN project of the CONSOLIDER–INGENIO 2010 program announces 8 contracts of personnel with partial financial support from CPAN. The proposed contracts are meant to provide support to the groups' research activities in a series of priority lines within the strategic actions of the CPAN Project. A detailed description of these contracts can be found in Annex I. The fundings to each contract will have a duration of one annuity and they will be limited by the ending date of the project (29th November 2012).

The groups participating in the CPAN Project will make an effort to give publicity to the present announcement in order to optimize the number and quality of the applications received.

1) Amount and nature of the financial support

The CPAN financial support for each of the contracts specified in Annex I will have the aim of co-financing the total contract cost, understood to be the sum of the net retribution plus the Social Security company fee. The beneficiary entities will hire the selected candidates in accordance with the current labour legislation.

The amount of the CPAN financial support will be 30.000 euro per year, and the minimum annual retribution they will receive, which must be indicated in the contract, is 27.000 euro (brut salary).

The remaining co-financing of the contract will be the responsibility of the beneficiary groups and organisms, who will assume the cost of retribution increments of the hired personnel in the following years, as well as the repercussions of any increases in the Social Security fee.

The beneficiary entities are obliged to put at the appointee's disposition all the installations and material means needed for the normal development of their work, as well as to guarantee the same rights and benefits enjoyed by the entities' personnel of similar category.

In case of interruption of the contract, the beneficiary entity and the appointed personnel are obliged to communicate such interruption to the CPAN Office within 15 natural days from the date of the interruption.

2) Candidate requisites

People whose contract is co-financed through this aid must have a graduate university or PhD degree depending on the contract to which they apply. Candidates must be in possession of the required degrees by the date in which the application is presented.

3) Formalization and Application Process

Applications will be presented by the candidates through an internet application which can be accessed from the WEB page of the CPAN project: <http://www.i-cpan.es>. Applications must include:

- 1) The candidate's personal information.
- 2) The type of contract to which the candidate opts.
- 3) The candidate's Curriculum Vitae, including a scanned copy of the academic certification and university degree.
- 4) For the contracts CPAN11-PD01 and CPAN11-PD02, the candidates will include a brief summary of the research project and three recommendation letters.

Applications must be presented from 22nd March, 2011 to 10th April, 2011 (both inclusive).

The beneficiary group shall complete the application with a report about the optimal fitness of each candidate for the foreseen activities, assigning a tentative priority order to each candidate. These reports will also be processed through the internet application installed in the CPAN WEB page. The deadline for these reports is 24th April 2011.

4) Evaluation of applications

The evaluation of applications will be done by an Evaluation Commission named by CPAN's Executive Committee. The referred Commission will study and order the applications according to the following rules:

- 1) Compliance of the candidate to the development of the tasks to be performed, as function of the technical skills required.
- 2) CV of the candidate.

The resolution with the list of selected candidates will be published in CPAN's web page. The Evaluation Commission could propose, if needed, a list of supplants.

The proposed candidates must confirm in a period of 15 natural days their acceptance by means of e-mail which must be sent both to the receiving group as well as to the



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CPAN Office. If no notification is received within that period, the CPAN's Executive Committee will be entitled to select the following candidate in the list of supplants.

5) Payment of the CPAN financial support and follow-up

In general, the assigned funding will start on the date in which the contract between the candidate and the corresponding organization starts, either after the publication of the resolution or before that, in this last case always having as limitation the date in which the period for presenting applications is open.

Payments will be done to the corresponding organizations after the publication of the resolution as soon as the contract being financed is presented.

Any publication or result related with the activities performed under this program must contain a reference to the CPAN financial support.

ANNEX I: Relation of Contracts

Reference: CPAN11-TS01

Participation in experiments and associated data analysis in neutron physics of interest for the new generation nuclear reactors, astrophysics and medical physics. Development of new standards.

CPAN beneficiary group:

Universidad de Sevilla.

Candidate requirements:

Engineer or degree in Physics. Previous experience in similar activities to the ones foreseen in the present contract, specially experimental data analysis of neutron experiments and the design of neutron sources, will be positively evaluated.

Job profile

The n_TOF-US group plans to measure the neutron induced alpha emission from S-33 at n_TOF facility.

The candidate should actively participate in the coordination tasks of the experiments to be performed at CERN, in their data analysis and also in the development of new proposals of experiments to be carried out in external facilities with neutron sources.

In that sense, more specifically he/she must coordinate the following tasks:

- Design and assembly of the S-33 target.
- Measurement of thickness and homogeneity of the S-33 target.
- Participation in the experiment at CERN.
- Data analysis and dissemination.
- Participation in new proposal of experiments at n_TOF
- Participation in new proposals of experiments in external neutron facilities within the framework of the european programs EFURAT and ERINDA.
- Participation, data analysis and dissemination of the results of future experiments approved en 20011.

He/she will also participate in experiments performed at n_TOF during the 2011 campaign and in the study and design of a neutron source at CNA.

Information and contact: José Manuel Quesada Molina; quesada@us.es

Reference: CPAN11-TS02

Development of a detection system for intensity modulated radiation therapy (IMRT) treatment verification.

CPAN beneficiary group:

Universidad de Sevilla.

Candidate requirements:

Bachelor's degree in Physics or Engineer (industrial, electronics or telecommunications)

Experience in detector systems and/or associated electronics will be highly valued; especially, in the context of experimental measurements using particle accelerators, and in applications for medical physics. Experience in Monte Carlo simulations and applications of the GEANT4 platform for modeling and simulation of accelerators, detectors, collimators, etc, will also be valued.

Job profile:

The candidate shall be actively involved in the research of the group in the field of intensity modulated radiation therapy (IMRT) treatment verification, to be carried out in collaboration with other national and international research groups. These tasks will include participation in experimental measurements at Hospital Universitario Virgen Macarena of Sevilla, in collaboration with staff of its Radiophysics Service.

Information and contact: Maria Isabel Gallardo; gallardo@us.es

Reference:CPAN11-PD01

Development and application of scattering formalisms to the study and interpretation of experiments involving exotic nuclei.

CPAN beneficiary group:

Universidad de Sevilla

Candidate requirements:

The potential candidates must be in possession of a PhD degree in Physics (or equivalent) by the date in which the application is presented. They must have a good level of English, spoken and written. Previous experience in research activities related to the field of exotic nuclei, preferably in structure and reaction calculations. Any previous postdoctoral experience will be also considered positively.

Job profile:

- Basic background in the calculation of nuclear structure properties using mean-field and shell-model techniques.
- Good knowledge of "traditional" reaction formalisms: optical model, coupled channels, distorted wave Born approximation for one-nucleon transfer, etc
- Background in nuclear reaction formalisms for the treatment of collisions involving few-body systems (for example, the Continuum-Discretized Coupled-Channels method)
- Expertise on some nuclear reactions code for calculations with the aforementioned formalisms (FRESCO, ECIS, etc).
- Advanced programming skills in Fortran, C or C++.

Information and contact: Antonio Moro Muñoz; e-mail address: moro@us.es

Reference: CPAN11-TS03

Development and implementation of particle accelerator applications in environmental and climatic change studies, and in radiological protection of the public.

CPAN beneficiary group:

Centro Nacional de Aceleradores

Candidate requirements:

Graduate in Physics or Engineer. It will be valued the experience in accelerator techniques and in the development of similar activities that the ones to be developed with this contract.

Job profile:

The candidate will coordinate the collaboration established between the CNA and the International Atomic Energy Agency (IAEA), reflected in several joint research lines. It should also promote the environmental research through the use of accelerators opening new collaborations with private companies, with the administration and with national and foreigners research groups. In this direction, it should promote the opening of new collaborations in research lines as:

- Determination of long-lived radionuclides at trace levels in different environmental compartments through accelerator mass spectrometry, on the frame of environmental and climatic studies.
- Development and application of different IBA techniques for the characterization of the radioactive contamination in different environmental compartments
- Development and application of several IBA techniques in research fields as atmospheric contamination, water quality, residue characterization....
- Application of particle accelerators in dating of geological samples

The candidate will operate also the cyclotron of the CNA, and will collaborate in the development and adjustment of the external line of the cyclotron for the performance of experiments.

Information and contact: Rafael García Tenorio: gtenorio@us.es

Reference: CPAN11-TS04

Divulcation and dissemination of the scientific activities developed by the Centro Nacional de Aceleradores, as well as of the main results generated by the groups of Nuclear Physics on the frame of the Program Consolider-CPAN.

CPAN beneficiary group:

Centro Nacional de Aceleradores

Candidate requirements:

Graduate in Physics of Engineer. It will be valued especially the previous experience in the application of techniques with accelerators, the knowledge at post-graduate level in the fields of Particle Physics, Astrophysics and Nuclear Physics, and previous experience in divulgation and dissemination tasks similar to the ones to be developed in this position.

Job profile:

The candidate will be the responsible of the dissemination and divulgation to the administration, to private and public companies and to the society in general, of the main milestones generated through the use of the big installations of the Centre (Tandem accelerator of 3 MV, Tandentrom accelerator for mass spectrometry and cyclotron accelerator).

In addition, he/she will coordinate the production of scientific reports of the CNA, he/she will act as link for all the groups of Nuclear Physics belonging to the program Consolider-CPAN and will collaborate with the managers of the program in the dissemination and divulgation of the activities and the scientific production generated, and in organization of events, conferences, etc..

The candidate will work with special emphasis in the activities developed in the fields of Particle Physics, Astroparticles and Nuclear Physics

Information and contact: Rafael García Tenorio; gtenorio@us.es

Reference: CPAN11-TS05

Participation in the design, construction and characterization of the HYDE detector system based in segmented silice sensors (DSSSD)

CPAN beneficiary group:

Universidad de Huelva.

Candidate requirements:

Master degree in industrial, mechanics, electronics or telecommunication Engineering.

Job profile:

The candidate will participate in the construction and adjustment of the prototypes of the HYDE system detectors that will be installed at FAIR accelerator (Darmstadt, Germany), nowadays in construction. At the first phase, the prototypes will be designed, built and will be tested con radioactive sources at the Huelva University laboratories. After the fabrication of a limited number, the candidate must realise a characterization in national and international particle accelerators.

Information and contact: Ismael Martel; imartel@uhu.es

Reference: CPAN11-TS06

"Technical support for the data experimental analysis from AGATA at LNL and PRESPEC (GSI-FRS)"

CPAN beneficiary group:

Universidad de Salamanca.

Candidate requirements:

Degree in Physics with experience in measurements with Ge tracking arrays

Job profile:

The LRI-USAL group foresee in short term to join the AGATA collaboration, initially contributing to the experimental activity that is being performed with the five triple clusters AGATA sub-array at the Laboratori Nazionali di Legnaro (INFN) in Italy and later with a ten triple cluster sub-array at the PRESPEC (GSI-FRS) in Germany. Consequence of these activities is their participation in a wide bunch of nuclear structure experiments performed during the LNL and PRESPEC phases of AGATA.

The acquisition and analysis of the experimental data coming from AGATA, a Ge tracking array, involve pulse shape analysis and further tracking to disentangle, from the interaction signals acquired, the different tracks corresponding to the γ rays impinging the crystals in coincidence. Both steps are very dependent on the experimental setup geometry, so they have to be adapted to each experiment. This task requires a deep knowledge of the AGATA detector and its acquisition system. The aforementioned group intends also to contribute to the development of the tracking analysis associated to this kind of detectors which takes part of the acquisition software, to be able to contribute in the present and future phases of AGATA.

With this goal, the hosting group expects first of all to optimize the analysis of experimental data coming from experiments with AGATA and secondly to get in deep in the applications of tracking detectors to imaging as demanded by nuclear experiments as DESPEC in FAIR.

The objectives of the work proposed required specialized staff with previous experience in measurements with AGATA.

Information and contact: Begoña Quintana; quintana@usal.es

Reference: CPAN11-PD02

Many-body forces in finite fermi systems.

CPAN beneficiary group:

Universidad de las Islas Baleares.

Candidate requirements:

The candidate must hold a PhD degree in Physics and a high quality background on field theory applied to condensed matter physics. We will put special attention to the consequences in the dynamics of the systems when symmetries (isospin and parity) and time-reversal invariance are broken.

Job profile:

The candidate must be an expert in dealing with numerical tools such as those related to numerical renormalization group (NRG) and more specifically to the technique of density matrix renormalization group (DMRG). This approach has proven to be extremely useful in the calculation of properties in finite Fermi systems. It has also been recently used in large-scale nuclear shell-model and in the energy spectrum calculation of quantum dots. In analogy to DMRG, knowledge of the candidate on NRG techniques will be a starting point to develop the Similarity Renormalization Group tool (which have been successfully applied for calculations of 4He with higher many-body forces) to the calculation of many-body forces. The next area of investigation for this position will consist of implementing the random matrix theory for the study of the dynamics in chaotic quantum systems (e.g., quantum billiards). Theoretical predictions will be derived with the help of field-theoretical methods adapted from condensed-matter physics and compared with phenomenological approaches.

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