

## **Open of permanent position At São Paulo University - Brazil**

A permanent position at the São Paulo University (USP) is open in the field of Experimental High Energy Nuclear Physics. Candidates are expected to have a strong background in experimental nuclear physics, with experience in data taking and data analysis. Good knowledge of phenomenological aspects of nuclear reactions is wellcome.

The Institute of Physics at the University of São Paulo is the largest one in Brazil, and has had participation on large experiments in LHC, RICH, Jefferson Lab. and others. Successful candidate is expected to give lectures and carry research on nuclear physics at high energies.

The selection process at USP is composed of three examinations: a CV exam, a project exam and a lecture exam. In the CV examination the candidate is argued about the work he/she has developed up to now, based on the information given in a detailed CV. In the project examination the candidate is argued about a project that must be presented upon subscription. In the lecture exam the candidate must give a lecture on a subjected sorted 24 hours before among ten topics selected from the program given below.

Subscription to the exam must be done up to January 29, 2013. For this end, the following documents must be sent to Assistência Acadêmica - Instituto de Física da Universidade de São Paulo, address: Rua do Matão, Travessa R Nr.187 CEP 05508-090 Cidade Universitária, São Paulo - Brazil.

1. Detailed CV containing personal information, academic information and professional experience, including a complete list of publications.
2. A complete research project which will be used in the project exam.
3. Copy of the identifying pages of the passport.
4. Foreign candidates have to ask for validation of his/her Ph.D. certificate at subscription.

The program for the lecture exam is as follows:

1. Modern Physics
  - Kinetic theory of ideal gases.
  - Boltzmann and Maxwell distributions.
  - Experimental evidences of quantum mechanics.
  - Black-body radiation.
  - Compton effect, photoelectric effect.
  - Rutherford and Bohr model for the atom.
  - de Broglie wave-particle duality.
  - Uncertainty principle, Schroedinger equation.
  - Solutions of Schroedinger equation in one dimension.
  - Three dimensional Schroedinger equation.
  - Study of the solutions for a particle in a 3-D box.
  - Solutions of the equation for central-potentials, Hidrogen atom.

## 2. Restrict relativity

- Lorentz transformations.
- Time dilation and space contraction.
- Relativity principle and speed of light.
- Simultaneity.
- Sum of velocities in relativity theory.
- Doppler effect.
- Michelson-Morley experiment, Trouton-Knoble experiment, Kauffmann experiment and others.
- Notion of General Relativity theory and experimental verifications.

For mor information, please contact Prof. Dr. Airton Deppman - email: [deppman@if.usp.br](mailto:deppman@if.usp.br) or [adeppman@gmail.com](mailto:adeppman@gmail.com)