

# CEA TECHNOLOGICAL RESEARCH DIVISION

## POST-DOCTORAL POSITION 2006-2007

### Development of Signal processing for low temperature detectors applied to ionising radiation metrology

The CEA is a French government-funded technological research organisation. A prominent player in the European Research Area, the CEA is a leader in research, development and innovation, and sets up collaborative projects with many partners around the world. The CEA is active in three main fields : Energy, information and health technologies. In each of these fields, the CEA maintains a cross-disciplinary culture of engineers and researchers, building on the synergies between fundamental and technological research. The total CEA workforce consists of 15 000 employees (52 % of whom are in management grades) and welcomes 900 PhD students and 300 post-docs. <http://www.cea.fr/gb/index.asp>

The Henri Becquerel National Laboratory (LNHB) at CEA is France's ionising radiation metrology laboratory. It is responsible for radioactivity measurements and nuclear data determination at the highest level of accuracy on the national scale. LNHB has introduced a breakthrough in ionising radiation metrology with a new method for absolute activity measurements. The detectors developed in collaboration with the University of Heidelberg, are magnetic calorimeters operated at very low temperature. The technique allows to have access to unprecedented information on nuclear decay schemes. CEA-LNHB has an immediate opening for a postdoctoral scientist to meet the need for improved signal acquisition and signal processing. The candidate will develop new methods and algorithms that will improve detection threshold and energy resolution to push state-of-the-art forwards. A realistic modelling of the noise and the signal can be achieved only with a good understanding of the detection physics principle and ionising radiation and matter interaction processes. This theoretical and experimental research is applied to the development of standards for nuclear medicine and nuclear waste management.

Essential duties :

- Conduct original and independent research, in collaboration with other CEA researchers into signal processing development for different nuclear applications
- Work as part of scientific team and interact with conceivers of detectors (working language is English)
- Present research at meetings and publish in refereed journals

Essential skills, knowledge and abilities :

- Recent Ph.D. in signal processing
- Excellent programming skills with C++, MATLAB (new acquisition card to be programmed)
- Ability to analyse data (Markov processes, Bayesian approach, ...)
- Ability to interact effectively with a team of interdisciplinary scientists having different backgrounds
- Effective verbal and written communication skills

CEA offers a challenging environment. Successful applicant will be offered a competitive salary according to experience and knowledge.