



2015-IPR-E8-FGIV-4335

FG IV Technical Support Officer - Specialist in nuclear electronics for fast radiation detectors

Position for:

Specialist in nuclear electronics for fast radiation detectors

The Nuclear Security Unit operates the Neutron Laboratory for research in non-destructive analysis (NDA) methods and instrumentation. Among other installations, the laboratory is home to the Pulsed Neutron Interrogation Test Assembly (PUNITA) for studies of active neutron techniques. The laboratory undertakes a number of research projects in the field of detection and mass assay of special nuclear materials. For this purpose a variety of radiation detectors, detector electronics and acquisition systems are employed. The objective of these projects is to develop novel analysis methods and instrumentation with potential for infield applications in nuclear safeguards and security. One particular project of this kind concerns the development of a neutron and muon detection and acquisition system based on multiple scintillation detectors. The fast detector signals need to be digitized and processed in fast electronics, and coincident detection events to be processed and interpreted in real time.

To support the experimental research activities and in particular the nuclear electronics developments mentioned above, **we are seeking a scientist with experience in analogue detector electronics such as signal amplifiers, digital data acquisition systems such as fast signal digitizers, and digital signal processing.**

The tasks require the candidate to have detailed knowledge in the following technical areas:

- Low-level programming of hardware such as FPGA electronics, as well as design of fast analogue to digital conversion circuitry
- VHDL and Verilog programming of FPGA circuitry
- Electronic circuit design for analogue and digital signal processing
- Commercial digital electronics components, including their programming

Candidates should be university graduates in nuclear electronics, radiation detection, or electrical engineering with several years of practical experience in circuit design and detector electronics. This includes demonstrated experience of 10 years in the technical areas mentioned above.

Knowledge and experience in hardware programming of data acquisition systems is important.

Also experience with neutron detection systems would be an advantage.

Language skills: English

Soft skills: ability to integrate in small team of researchers, laboratory work with radioactive sources

Institute Unit	Institute for Transuranium Elements (ITU) Nuclear Security Unit (E.8) Exploratory Research Programme Further information: https://ec.europa.eu/jrc/en/institutes/itu
Indicative duration	12 months initial contract with possible renewals up to maximum 6 years
JRC Site Country	Ispra Italy
Rules and eligibility	<p>The candidate must be on a valid EPSO reserve list for Function Group IV contract staff or have applied to the permanent open call for researchers FG IV:</p> <p>https://ec.europa.eu/jrc/en/working-with-us/jobs/vacancies/function-group-iv-researchers</p> <p>Auxiliary contract staff: https://ec.europa.eu/jrc/en/working-with-us/jobs/temporary-positions/contract-staff-members</p> <p><i>Please note that due to the high number of applications received only shortlisted candidates will be contacted.</i></p>