جامعة نيويورك أبوظبي

NYU | ABU DHABI

Radioactivity Measurements with Gamma Ray Spectroscopy

POSITION TITLE: RESEARCH ASSISTANT

RESEARCH PROJECT TITLE: RADIOACTIVITY MEASUREMENTS WITH GAMMA RAY SPECTROSCOPY

FACULTY NAME & TITLE: FRANCESCO ARNEODO, ASSOCIATE PROFESSOR OF PHYSICS

RESEARCH PROJECT DESCRIPTION

Radioactivity is everywhere. Natural decays of unstable isotopes constitute the unavoidable radioactive background of the earth's environment. Radioactivity is also produced by man, sometimes at dangerous levels. Some physics experiments need an environment with an extremely low radioactivity level. The radioactivity of an object can tell many things about its age, provenance and safety. Radioactivity must be measured, monitored, and sometimes reduced.

Particle physics technology offers several detection techniques to measure precisely the radioactivity levels and identify its origin. Our group has, among other instruments, a shielded sodium iodide (NaI) 3-inch scintillator, that can detect gamma rays up to an energy of a few MeVs. The successful applicant will learn how to calibrate and operate the detector taking measurements of several samples of materials, and characterizing their radioactivity levels, also in view of their possible deployment in the xenon1t dark matter experiment in Italy. He or she will also learn how to analyze the data. Successively, she or he will work on the development of a portable radioactive detector for use in the field, making use of novel scintillator crystals coupled with silicon photomultipliers and state-of-the-art electronics.

RESPONSIBILITIES OF THE POSITION

- Calibration of a NaI detector
- Take measurements of samples, and determine their activity levels.
- Perform data analysis.
- Participate in the research and development with crystals and silicon photomultipliers.

ESSENTIAL QUALIFICATIONS:

Bachelor of Science in Physics, Engineering, Biology, Chemistry.

PREFERRED EXPERIENCE / SKILLS:

Motivation and commitment

APPLICANTS TO PROVIDE:

1. Statement of interest in the position

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2. Transcript of degree(s)
3. CV
4. Two letters of recommendation