

Job Description

Job Title	R&D S&E, Electrical Engineer (Experienced)
Job ID	678575
Location	Albuquerque, NM
Full/Part Time	Full-Time
Regular/Temporary	Regular

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Bidder Eligibility

Level promotions (Member to Senior, Member to Principal, and Senior to Principal) may be permitted, but are not guaranteed, on this requisition.

Employees must remain in their current position for one year before applying for a new position, with the exception of student interns. Application of this requirement will not supersede collective bargaining agreements. See collective bargaining labor agreements for represented bidder eligibility requirements for represented employees.

Posting Duration

This posting will be open for application submissions for a minimum of seven (7) calendar days, including the 'posting date'. Sandia reserves the right to extend the posting date at any time.

What Your Job Will Be Like

Are you passionate about fundamental and applied research in support of a critical national security mission? Are you passionate about developing and maturing leading edge diagnostics technologies to impact our mission? Do you want to join a dynamic organization that shoulders crucial responsibilities for our Nation's security?

You could be the future diagnostics development and application researcher we are seeking in the Neutron Generators Applied science and technology Maturation department.

You will be working with other SMEs and researchers in the group to develop diagnostic techniques for the investigation of physics relevant to Neutron Generators, especially neutron tubes. These investigations will be in service of improving understanding of the relevant physics governing the operations of the tube and closing knowledge gaps in this domain. The data from these investigations will also provide model development and validation data for a computational modeling capability. Typical techniques of interest include electrical waveform capture and analysis, non-intrusive diagnostic methods applicable to understand High Voltage Breakdown (Flashover) in particle accelerators, spectroscopic and other techniques for composition and thermal field measurements. Familiarity with diagnostics equipment, their safe operations and associated data analysis methods will be critical for success in this role. Familiarity and experience with laser based optical diagnostic techniques is a plus. You will work with engineers designing current and future generations of tubes, production engineers responsible for their production and SMEs developing modeling capabilities to simulate the operation of these tubes. A background in high voltage electrical engineering, electrical and material aspects of particle accelerators and the plasmas therein, in addition to advanced diagnostic and data analysis

techniques to interrogate these physics is needed.

On any given day you may be called upon to:

- Develop, design, and implement an experiment to investigate physics relevant to neutron tubes through electrical signal measurements and analysis, spectroscopic and other non-intrusive techniques.
- Work with other staff members and technologists to safely implement diagnostics to obtain data from these experiments.
- Analyze the data to inform the understanding of relevant physical phenomena.
- Collaborate with designers and production floor engineers to problem solve issues arising due to design or production processes.
- Document the findings in presentation, reports and publications.
- Collaborate with numerical modeling SMEs to identify validation data requirements and develop strategies to assert model credibility in relevant regimes.

Qualifications We Require

- Doctoral degree in physics, electrical engineering or other relevant science or engineering disciplines.
- Experience with high-vacuum and pulsed high-voltage systems.
- Knowledge of and experience with non-intrusive diagnostics for high-voltage electrical systems and waveform analysis for physics discovery.
- Familiarity with dynamic plasma-surface interactions such as surface desorption and erosion, secondary-particle emission, insulator breakdown, and other non-equilibrium effects.
- Proficiency in methods and tools commonly used for data acquisition in and analysis of data collected from experimental investigations of spatio-temporal physical phenomena.
- Ability to obtain and maintain a DOE Q clearance..

Qualifications We Desire

- Understanding and experience with experimental, theoretical, and modeling techniques for plasma physics.
- Knowledge of and experience with optical and non-optical diagnostic techniques for plasma density, temperature, and composition.
- Experience and understanding of laser based techniques for plasma physics investigations.
- Experience and demonstrated ability to work with multi-disciplinary teams.
- Ability to make decisions requiring scientific or engineering judgment across more than one discipline.

About Our Team

You will be working across all the departments in the NG Product Design and Technology Group. The Neutron Generator Product Design and Technology Group has Design Agency (DA) responsibility for Mark Quality (MQ) neutron generators used in all nuclear weapons in the US stockpile. We also have DA responsibility for neutron tubes and active ceramics used in our neutron generators, neutron monitors that measure pulsed neutron and x-ray output of neutron generators and we design ancillary, non-MQ devices used for calibration and testing (portable neutron detectors, lead probes, controlatrons, field neutron generators, and x-ray sources). An additional design capability supports design of MQ sprytrons used in neutron generators, other nuclear weapon components, and DoD high voltage switching applications. We have Production Agency (PA) responsibility for sprytrons, overseeing sprytron production at a commercial vendor. The Group is responsible for applied research into early stage design concepts and employs advanced diagnostic and modeling capabilities to increase our understanding of the underlying science behind our products. We design and

provide engineering support for all neutron generator production, product acceptance, development, and surveillance testers. These same diagnostic, modeling, and test capabilities are employed within the Group to understand life-cycle performance through surveillance of fielded neutron generators and shelf-life aging studies. We provide data and analysis that supports the Annual Assessment of the Nuclear Weapon Stockpile delivered to the President of the United States. We work closely with our Production Agency (PA) partners as well as our design partners in the Explosives Technologies Group (7550) to provide high reliability components to the National Nuclear Security Administration and our weapon systems customers and are proud of our role in maintaining the nuclear deterrent that aims to enhance global peace and security.

You will be in the NG Applied Science and Technology Maturation Department in the NG Product Design and Technology Group. The mission of the Neutron Generator Applied Science and Technology Maturation Department is to conduct focused research towards the discovery, integration, and protection of the scientific knowledge behind the design, production, and sustainability of neutron generators. Our work uses computational modeling and experimental techniques spanning materials science, chemistry, plasma science, high voltage & arc physics, advanced manufacturing methods, and neutron testing to support manufacturing and design. Along with our internal expertise, we also collaborate with a variety of internal organizations and external institutions to accomplish our goals. We apply this knowledge in creative and innovative ways for understanding the health of the existing stockpile, to design for the future, and to support national security.

Hiring Manager

Clark Snow

Security Clearance

Sandia is required by DOE to conduct a pre-employment drug test and background review that includes checks of personal references, credit, law enforcement records, and employment/education verifications. Applicants for employment need to be able to obtain and maintain a DOE Q-level security clearance, which requires U.S. citizenship. If you hold more than one citizenship (i.e., of the U.S. and another country), your ability to obtain a security clearance may be impacted.

Applicants offered employment with Sandia are subject to a federal background investigation to meet the requirements for access to classified information or matter if the duties of the position require a DOE security clearance. Substance abuse or illegal drug use, falsification of information, criminal activity, serious misconduct or other indicators of untrustworthiness can cause a clearance to be denied or terminated by DOE, resulting in the inability to perform the duties assigned and subsequent termination of employment.

EEO

All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, disability, or veteran status and any other protected class under state or federal law.

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