

## Postdoc / PhD Fellowship – AMO Experimental Physicist/Engineer

### OPPORTUNITY

General Atomics has an exciting opportunity to support the research of a postdoctoral fellow or PhD candidate within our Quantum Science and Technology team. You will join a group of scientists and engineers to help design, build, and operate experimental systems used to study and manipulate hardware qubits. Our quantum team is working on a variety of projects in areas such as architectural design for quantum networking and memory, as well as applications of quantum algorithms and quantum sensing.

### RESEARCH SUMMARY

GA is looking to support research in experimental physics relating to the construction of electro-optical systems that probe and manipulate single Nitrogen-Vacancy (NV) centers in diamond. This research is expected to advance the optical system design, device modeling, and characterization of the qubit properties, and explore techniques to entangle NV centers with nearby nuclear spins. In addition, there is an opportunity to research novel color center technologies, quantum architectures, and applications of NV color centers in quantum networking and quantum sensing.

### DUTIES & RESPONSIBILITIES:

- Support the procurement, build, assembly, integration, and test of hardware systems
- Perform alignment, integration and testing of prototype and proof of concept systems, involving lasers, optics and fiber-optics, electronics, and mechanical sub-assemblies
- Building test stations and developing the corresponding routines and control software.
- Troubleshoot as well as conduct failure analysis of electro-optic and opto-mechanical systems to improve process and design
- Organize and analyze data; document results.
- Prepare and present technical information for engineers and scientists
- Create test plans and procedures
- Assist with lab organization and safety procedures
- Support equipment calibration and metrology

### QUALIFICATIONS:

#### **Basic Qualifications**

- PhD/PhD Candidate in experimental physics, electrical engineering, or related field, with knowledge of atomic and optical physics
- Experience designing and running complex AMO systems and experiments
- Hardware skills related to lasers, optics, radio frequency and microwave analog electronics, and digital control electronics

- Have the ability to work in the U.S. for the length of the appointment and be located at General Atomics in San Diego, CA (relocation stipends are available)

### **Preferred Qualifications**

- Experience working with NV and color center quantum systems
- Experience implementing and troubleshooting quantum operations by utilizing laser- or microwave-driven mechanisms
- Experience in simulation, modeling, and coding to support experiment design, execution, and analysis
- Experience with Python programming for data capture and data analysis
- Engineering or systems engineering experience in transforming a complex physical system into a product
- Strong organizational and leadership skills, demonstrated through effective project management and execution
- Excellent written and oral communication skills, with peer-reviewed publications within the quantum computing literature

### **APPOINTMENT LENGTH**

Appointments are initially for one year with the option to extend the appointment for additional years, contingent upon project needs and funding availability.

### **BENEFITS**

You will receive a stipend to support this research. Stipends are typically based on a participant's academic standing, discipline, and experience. Other benefits may include the following:

- Health Insurance Supplement (Participants are eligible to purchase health insurance through ORISE)
- Relocation Allowance
- Training and Travel Allowance

### **ABOUT ORISE**

This program, administered by Oak Ridge Associated Universities (ORAU) through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and General Atomics. Participants do not enter into an employee/employer relationship with ORISE, ORAU, General Atomics or any other office or agency. Instead, you will be affiliated with ORISE for the administration of the appointment through the ORISE appointment letter and Terms of Appointment. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE. For more information, visit the ORISE Research Participation Program.

### **HOW TO APPLY**

To apply for this position, send your CV/resume directly to Matthew Cha ([chamatthew@fusion.gat.com](mailto:chamatthew@fusion.gat.com)) or Mike Jaris ([jarism@fusion.gat.com](mailto:jarism@fusion.gat.com)).