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Dear Members of the Search Committee,

I was very excited to read that the Physics and Astronomy Department at Texas Tech University has an opening for a condensed matter physics experimentalist, and I hope that I will be considered for the position. I am well aware of TTU outstanding reputation, and I am particularly interested in being part of a department with a substantial commitment to research in condensed matter physics, quantum optics and materials science, in a multidisciplinary, collaborative environment.

I believe that my research in exploring novel quantum materials and solid-state-fluorescent defects and applying them for nanotechnology, biomedical, and computing applications would be a complementary addition to the current research at TTU. In the attached research statement I have proposed several lines of research which demonstrate my approach to physics using concepts from quantum optics and condensed matter nanotechnology to tackle outstanding problems in the physical and quantum information sciences. Studying selective quantum materials (wide-band-gap semiconductors and two dimensional materials) with desired color centers, exhibiting unique quantum properties, will elucidate the physical mechanisms responsible for the observed novel quantum properties and open new applications in optoelectronics, spintronics, and quantum information processing. Optically polarized diamond nanostructures offer a room temperature route to magnetic, current, and temperature imaging at the nanoscale of new materials with novel functionalities, including magnetic skyrmions, spin surface currents generated in topological insulators, current distribution in low dimensional materials, etc.

My academic training and +10 years of experience working as a physicist prepared me to be an effective researcher and teacher in your department. I have extensive research funding experience (NSF, NIH, DoD, etc.) that will help in attracting more funds to the department. I will also contribute to large research proposals such as the upcoming NSF QMASE Foundry, NSF-NRT, NSF-REU, DARPA, etc.

In addition to leading a strong research lab, I also look forward to engaging students through teaching and mentorship. I am enthusiastic about the physical sciences, and I hope that my diverse background, wide range of research interests, and extensive experience in academia at worldwide institutions offer a unique perspective that students will value. I will teach and develop both basic and advanced physics and materials science courses for undergraduate and graduate students. I have enclosed my CV, list of publications, statements of teaching philosophy and research plans, and the names and contact information of four professional references for your perusal. I thank you for your kind consideration and look forward to hearing from you further.

Sincerely,
Abdelghani Laraoui