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Toward a general-purpose ultra-low-external interference quantum device holder

Thursday 9 October 2025 14:00 (20 minutes)

We have produced a general-purpose ultra-low-external interference quantum device holder suitable for various qubit and quantum sensor platforms. It is a continuation of UCB/LBNL's blackbody radiation (BBR) stub filter flange (SFF) study, in collaboration with nine US institutes to obtain the best available techniques in attempt to optimize every aspect possible. In this presentation, we first introduce the concept of SFF. We explain its theory, working principle, and its criticality that distinguishes our device performance from others. Next, we introduce our approach to integrate SFF with advanced features and techniques available in the collaboration for optimizing magnetism, vibration, quantum platform compatibility, production cost, and cryogenic engineering practicality. Finally, we present preliminary data from various qubit and quantum sensor platforms to demonstrate the promising results of the project.

Authors: BALAJI, Yashwanth (Lawrence Berkeley National Laboratory); BAXTER, Daniel (Department of Physics and Astronomy, Northwestern University, Quantum Division, Fermi National Accelerator Laboratory); CARNEY, Rebecca (Lawrence Berkeley National Laboratory); CHANG, Yen-Yung (Lawrence Berkeley National Laboratory, Department of Physics, University of California, Berkeley); GARCIA-SCIVERES, Maurice (Lawrence Berkeley National Laboratory); GOLWALA, Sunil (Department of Physics, California Institute of Technology); HERTEL, Scott (Department of Physics, University of Massachusetts-Amherst); KHATIWADA, Rakshya (Illinois Institute of Technology, Quantum Division, Fermi National Accelerator Laboratory); KOWITT, Holden (Department of Physics, University of California, Berkeley); KURINSKY, Noah (SLAC National Accelerator Laboratory, Kavli Institute for Particle Astrophysics and Cosmology, Stanford University); LI, Xinran (Lawrence Berkeley National Laboratory); MOLENAAR, Daniel (Illinois Institute of Technology, Quantum Division, Fermi National Accelerator Laboratory); PYLE, Matt (Lawrence Berkeley National Laboratory, Department of Physics, University of California, Berkeley); RAMANATHAN, Karthik (Department of Physics, Washington University in St. Louis); RAY, Shilin (Department of Physics, California Institute of Technology); SADOU, Yann (Department of Physics, California Institute of Technology); SALEMI, Chiara (Lawrence Berkeley National Laboratory, Department of Physics, University of California, Berkeley); SANDOVAL, Brandon (Department of Physics, California Institute of Technology); SCHWARTZBERG, Adam (Lawrence Berkeley National Laboratory); STEVENS, Sidney (SLAC National Accelerator Laboratory); SUZUKI, Aritoki (Lawrence Berkeley National Laboratory); VAUGHN, Ronald (Department of Physics, University of Massachusetts-Amherst); XIONG, Junwen (Department of Physics, California Institute of Technology)

Presenter: CHANG, Yen-Yung (Lawrence Berkeley National Laboratory, Department of Physics, University of California, Berkeley)

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