

Finnish Special Session

Cryogenics role in quantum technology



D. Gunnarsson
CSO
Bluefors Oy, Helsinki, Finland



Abstract

Quantum technology has the promise of taking detection, information security and computation technologies beyond the capabilities of current state of the art by harvesting the quantum nature of things. Many of the technologies that explore the advantages of quantum nature require a measurement infrastructure that can operate at cryogenic temperatures, down to a few thousandths of a kelvin. This is especially true for many of the current efforts for creating a quantum computer. Bluefors is the leading company in the world providing tools for a cryogenic measurement infrastructure and has a key role in the supply chain of quantum computation. In this talk, I will give a brief background of Bluefors and our forecast on how modern cryogenics is a possibility for pursuing quantum technologies.

Biography

David Gunnarsson, CSO, is heading the R&D department at Bluefors Oy. In this position he leads Bluefors' cryogenic development for the quantum technology community. He holds a Ph. D. degree from Chalmers University of Technology, Sweden, 2005, on his work on the Josephson junction based quantum bit. After his Ph. D. he continued research at Low Temperature Laboratory, Helsinki University of Technology (2005-2008) and prior to joining Bluefors, he worked as a Senior Scientist at VTT Technical Research Centre of Finland (2008-2015). With his background in both microfabrication and cryogenic measurements of superconducting quantum circuits, he has a broad knowledge of the future requirements in cryogenics for the quantum computation field.