
Contribution ID: **10** Type: **Poster**

# Scalable DC control of ion traps

In order to scale trapped ion quantum computing from small lab experiments to industrial quantum computers, large ion traps will need to contain integrated electronics. Integrated electronics minimizes the number of voltages passed into the cryostat as the number of feed-throughs is limited. This reduces the complexity as well as the heat load on the cryostat. Here, I want to present the Infineon strategies on integrated electronics to enable the control of a large number of DC electrodes with few input lines. The fundamental idea is to employ multiplexing to use the same DAC voltages on different parts of the trap. As stray fields require different offsets for different parts of the trap, I will show different ways how to passively add offsets within the multiplexing structure. In addition, results of our first cryogenic DC multiplexing chip and an outlook on the next generation will be presented.

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**Session Classification:** Monday Poster