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Electric field noise in surface ion traps CRYSTAL NOEL, MAYA LEWIN-BERLIN, CLEMENS MATTHIESEN, YI ZHOU, HARTMUT HAEFFNER, University of California, Berkeley — Trapped ions provide a suitable platform for quantum information applications due to long coherence times and well-controlled manipulation of their quantum state. In order to scale to many qubits and allow for fast processing, traps are getting smaller and ions are trapped closer to the surface. An unfortunate consequence of this scaling is an increased sensitivity to electric field noise emerging from the surface of the trap electrodes that leads to anomalous heating of the ions. We present recent results exploring the frequency scaling of the measured noise as well as novel trap treatment effects.

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