Chip-Ray Reflector Reproduction Simulation

Trapping Ions

C.R.R.R.S.T

Anonemis Research

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Overview

C.R.R.R.S.T, Chip-Ray Reflector Reproduction Simulation, is an integration technology developed to address a large scale of ion qubits.

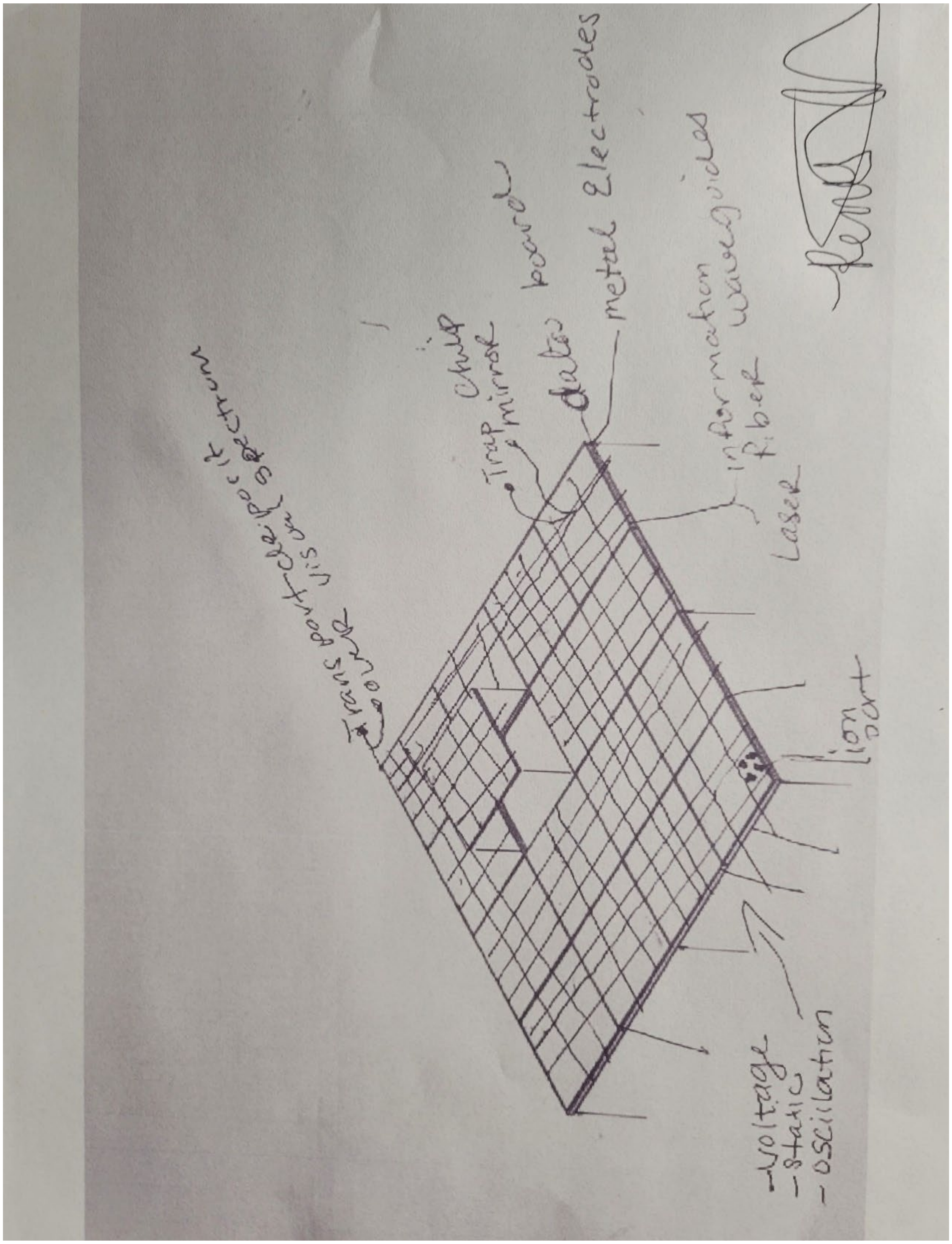
C.R.R.R.S.T traps the ion and holds them in a fixed positions by a combination of voltages, both static and oscillating, that are applied to metal electrodes placed around the positions we'd like the ions to be trapped in on the squared chip-ray reflector.

The ions are trapped above the surface of the plane in the C.R.R.R.S.T board, with the surface to ion distance scale being set by the size and spacing of the electrodes. Planar electrodes can be fabricated using microchip and mirror projecting techniques, thus, producing large numbers of zones arrayed in two dimensions for large numbers of ions to be trapped in, as well as to reduce the size of the electrodes to the micrometer scale.

The optics on a chip, tiny fiber waveguides are made by depositing the right materials, which of course have to be transparent over the visible spectrum, onto the trap chips.

These materials are then patterned on millions of square units which are both physical and artificially integrated by the use of reflective ray reproduction, using the same techniques used to pattern the ion trap electrodes.

These waveguide patterns define the paths that the laser light travels along, and we can design them to split the light from one path into many branches. The waveguides for the laser are a vertical layout for each board in the tower, designed to trap one ion per laser. The boards are double faced allowing enough for trap four ions per ion-chip-ports by pattern gaps in the waveguide material that act like a diffractive grating.



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