Neural network structure inference from its time series

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(Dated: October 13, 2013)

We present a model as well as experimental results for a surface electrode radio-frequency Paul trap that has a circular electrode geometry well-suited for trapping of single ions and two-dimensional planar ion crystals. The trap design is compatible with microfabrication and offers a simple method by which the height of the trapped ions above the surface may be changed *in situ*. We demonstrate trapping of single $^{88}Sr^{+}$ ions over an ion height range of 200–1000μm for several hours under Doppler laser cooling, and use these to characterize the trap, finding good agreement with our model.

I. INTRODUCTION

Radiofrequency (rf) traps have been applied extensively in a large variety of scientific studies over the past six decades. Originating from mass spectrometry, they have then been applied in fields such as metrology, quantum information science and cold molecular physics, to mention but a few.

ACKNOWLEDGMENTS

Thanks.

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