Quantum Information with Solid-State Devices

VO 141.A55
SS2016

Dr. Johannes Majer

Lecture 7

Next Lecture

May 23rd
@ Resselpark

WIENER PHYSIKALISCHES KOLLOQUIUM

TU-WIEN - UNIVERSITÄT WIEN

SS 2016

Einladung zum Vortrag von

Ignacio Cirac

Max-Planck-Institut für Quantenoptik
München

Quantum optics with emitters in waveguides

Recent progress in nano-fabrication and atomic physics has allowed to couple atoms (or other emitters) to structured waveguides. In this talk I will report on:(i) a theoretical framework to describe some of those experiments using both a master equation and a path integral approach; (ii) the existence of many-photon bound states in the presence of one emitter; (iii) some techniques to prepare multi-photon states in the waveguide using strong coupling and collective effects.

9. Mai 2016, 17:30 hrs
(ab 17 Uhr Kaffee)

TU Wien-Freihaus,
Wiedner Hauptstrasse 8 – 10
1040 Wien
Hörsaal 5,
2. Stock, grüner Bereich

http://wpk.univie.ac.at

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IBM Makes Quantum Computing Available on IBM Cloud to Accelerate Innovation

Users can run experiments on an IBM quantum processor

Select a topic or year

↓ News release

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↓ Related XML feeds

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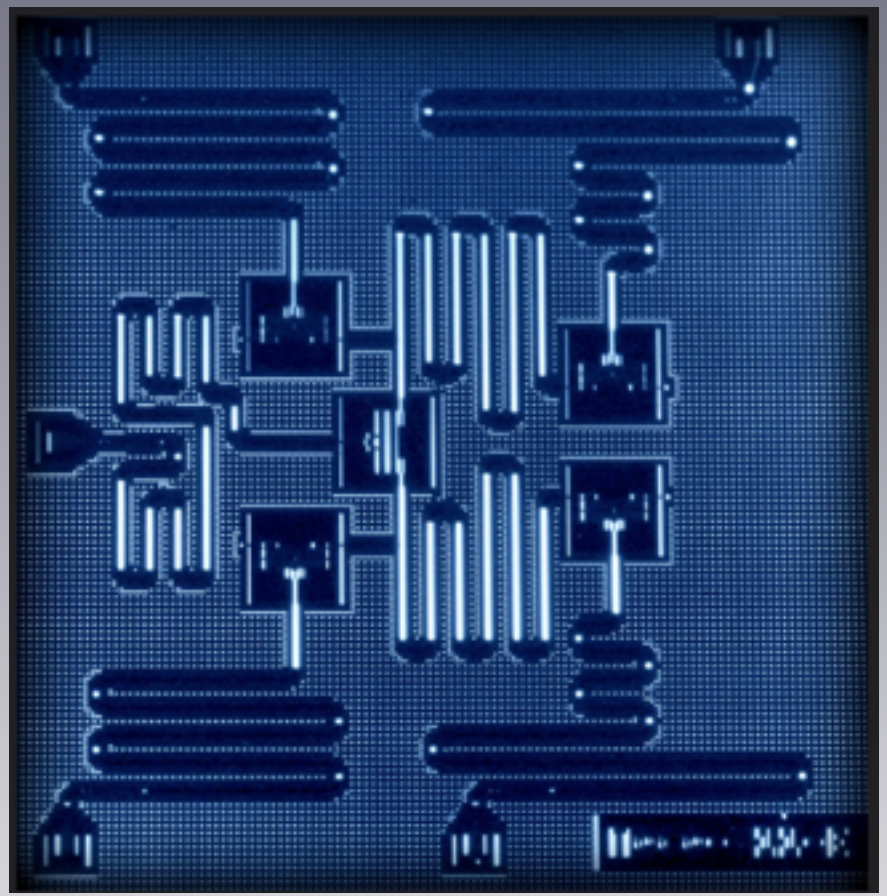
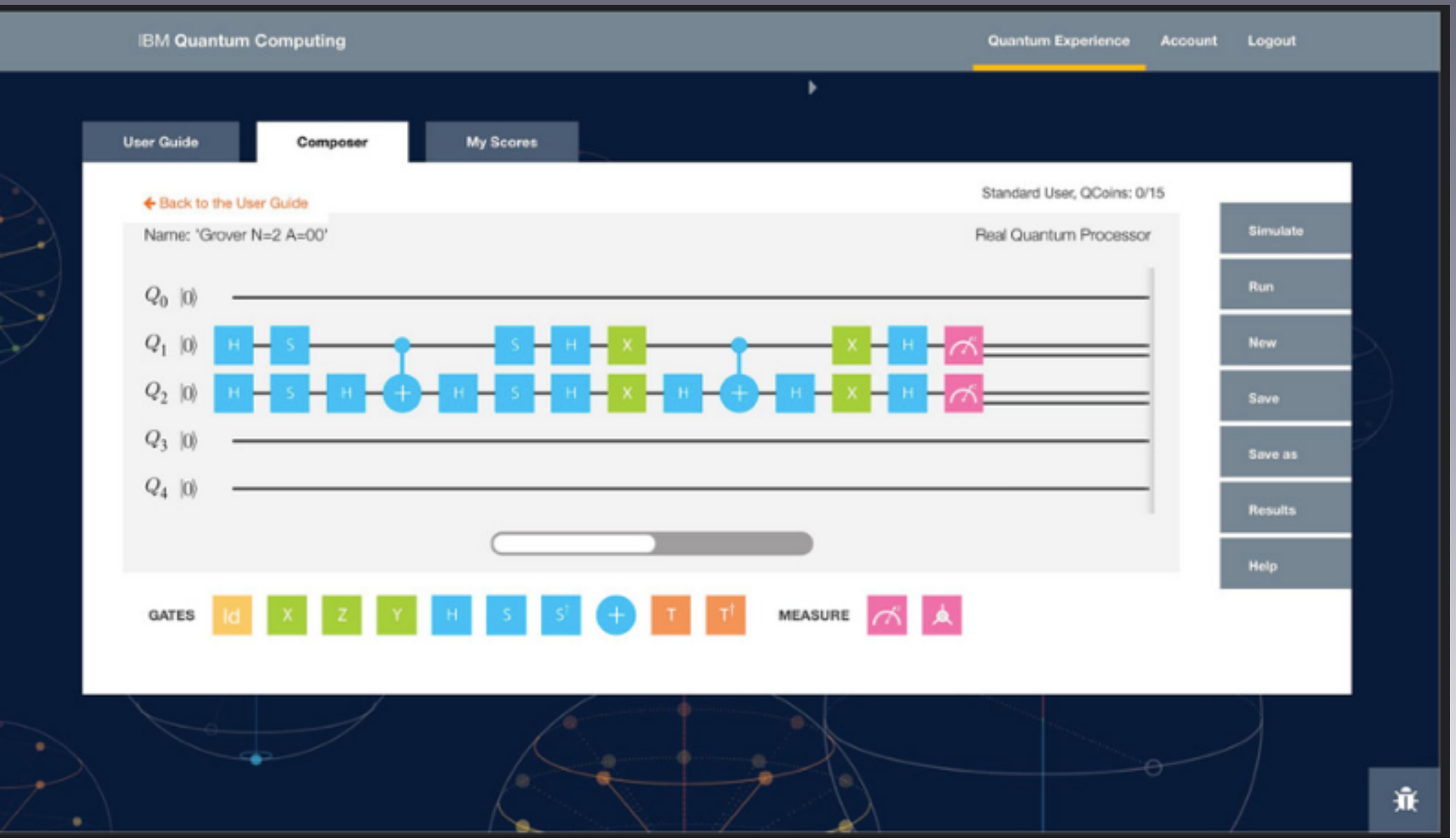
YORKTOWN HEIGHTS, N.Y. - 04 May 2016: IBM (NYSE: IBM) Research announced today that for the first time ever it is making quantum computing available to members of the public, who can access and run experiments on IBM's quantum processor.




IBM Quantum Computing
Quantum Experience
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My Scores
Back to the User Guide
Standard User, QCoins: 0/15
Name: 'Grover N=2 A=00'
Real Quantum Processor
Simulate
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New
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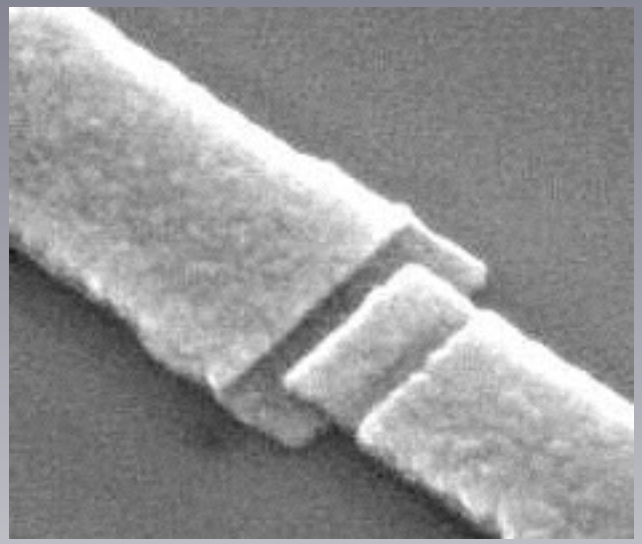
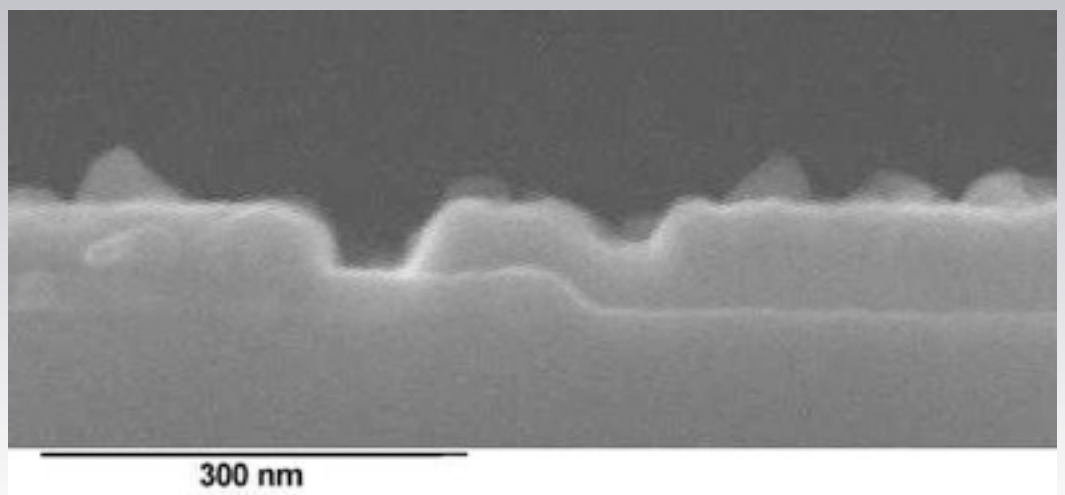
MEASURE

tunnel junction





VOLUME 64, NUMBER 15 PHYSICAL REVIEW LETTERS 9 APRIL 1990

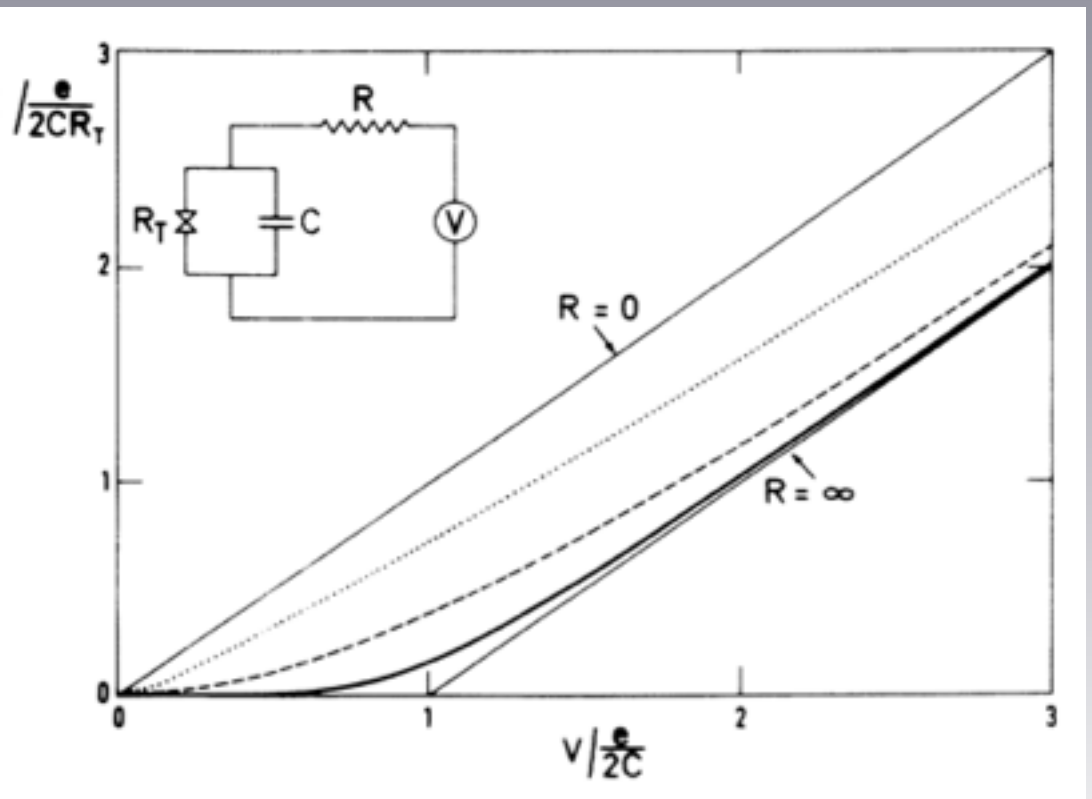
Effect of the Electromagnetic Environment on the Coulomb Blockade in Ultrasmall Tunnel Junctions

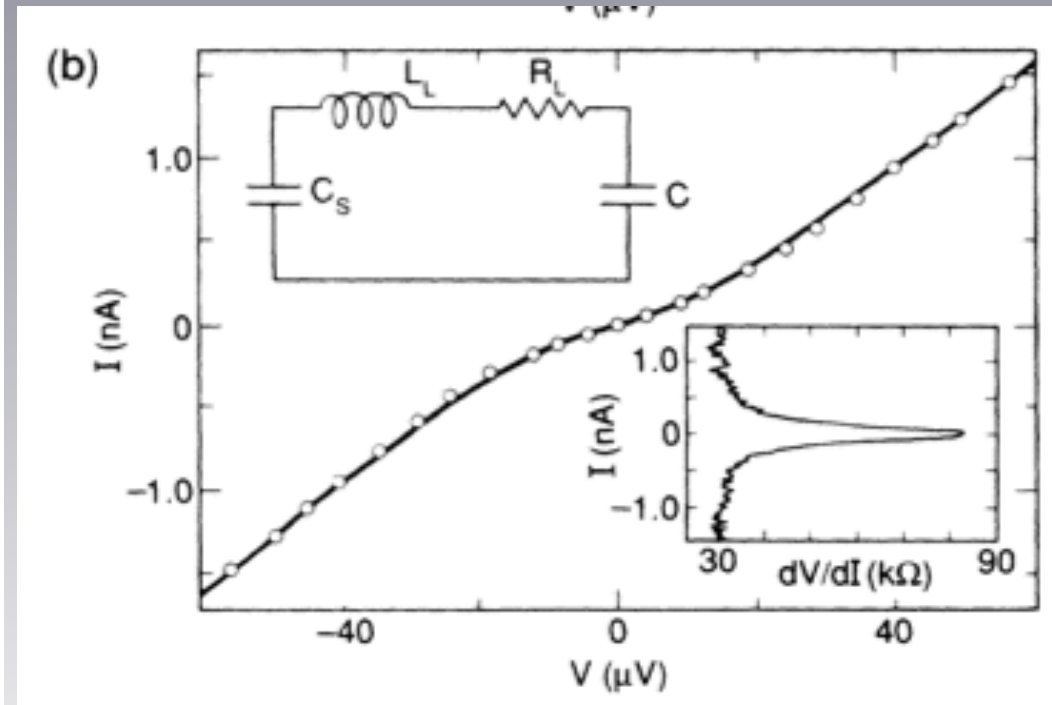
M. H. Devoret,[1] D. Esteve,[1] H. Grabert,[2] G.-L. Ingold,[2] H. Pothier,[1] and C. Urbina[1]
[1]*Service de Physique du Solide et de Résonance Magnétique, Centre d'Études Nucléaires de Saclay, 91191 Gif-sur-Yvette, France*
[2]*Fachbereich Physik, Universität-Gesamthochschule Essen, 4300 Essen, Federal Republic of Germany*
(Received 4 December 1989)

VOLUME 64, NUMBER 13 PHYSICAL REVIEW LETTERS 26 MARCH 1990

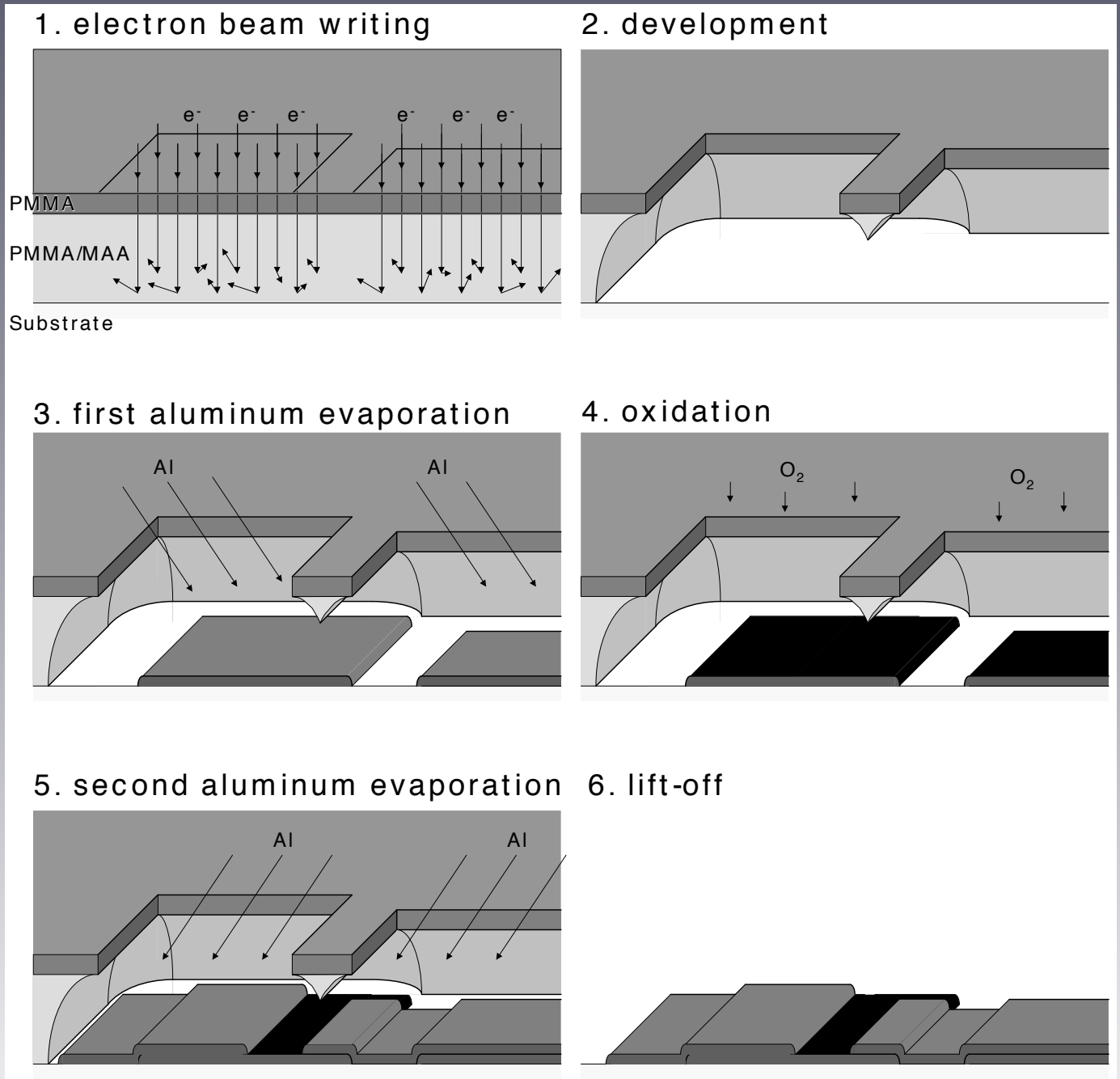
Charge Fluctuations in Small-Capacitance Junctions

A. N. Cleland, J. M. Schmidt, and John Clarke
Department of Physics, University of California, Berkeley, California 94720
and Materials and Chemical Sciences Division, Lawrence Berkeley Laboratories, Berkeley, California 94720
(Received 18 December 1989)





Shadow Evaporation



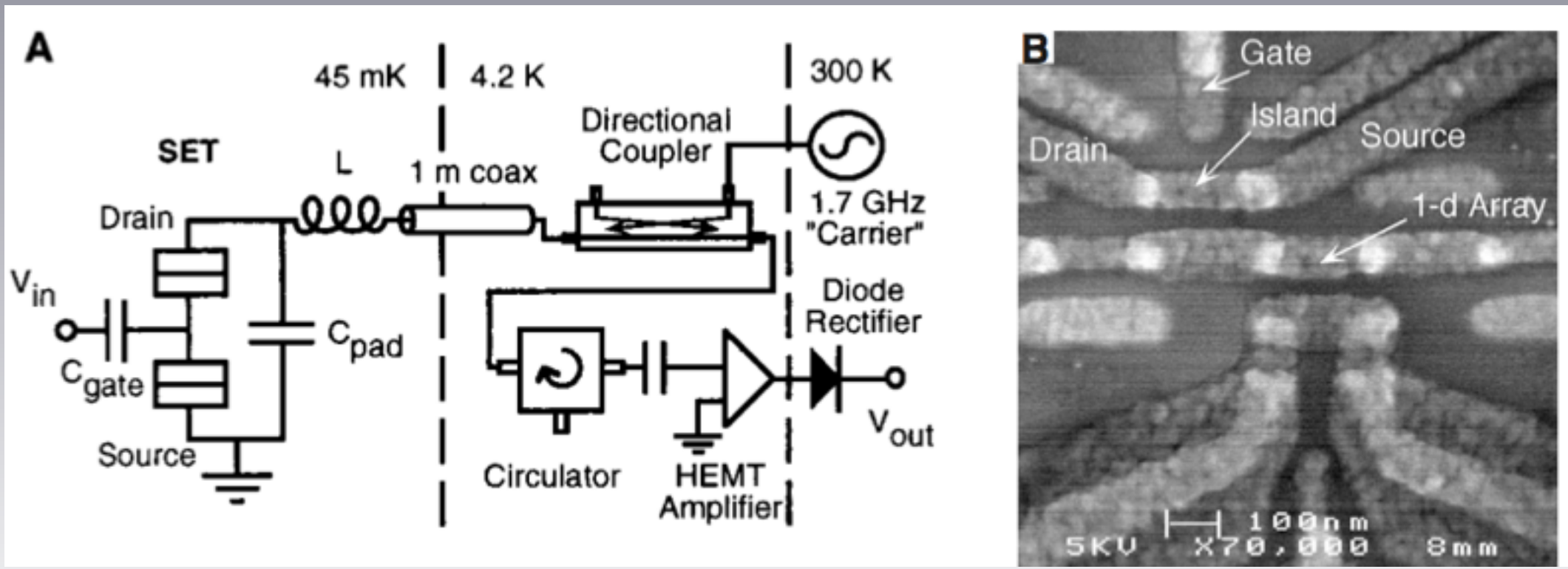
T. A. Fulton and G. J. Dolan.
Observation of single-electron charging effects in small tunnel junctions.
Physical Review Letters, 59(1):109-112, July 1987.

RF SET

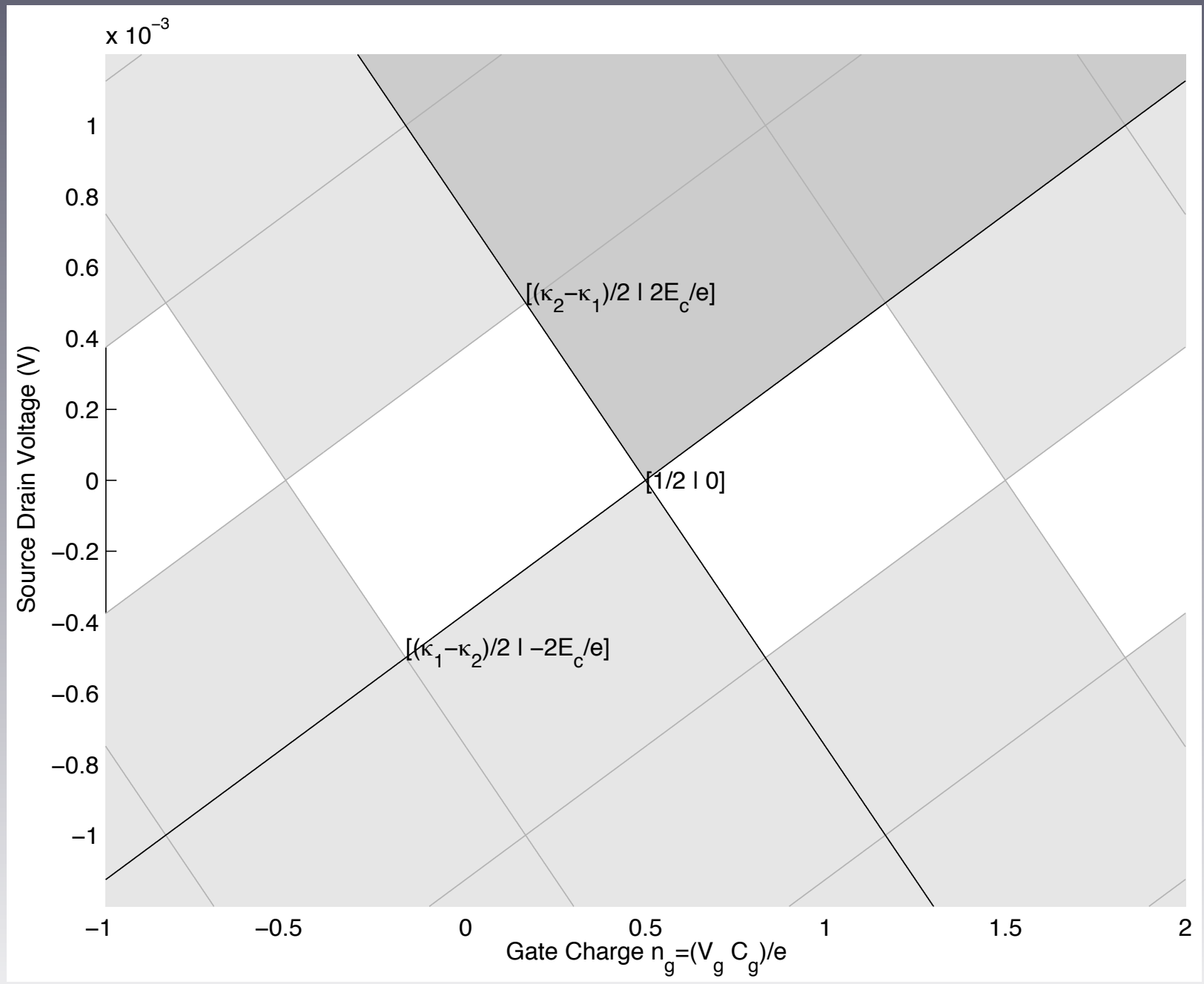
The Radio-Frequency Single-Electron Transistor (RF-SET): A Fast and Ultrasensitive Electrometer

R. J. Schoelkopf,* P. Wahlgren, A. A. Kozhevnikov,
P. Delsing, D. E. Prober

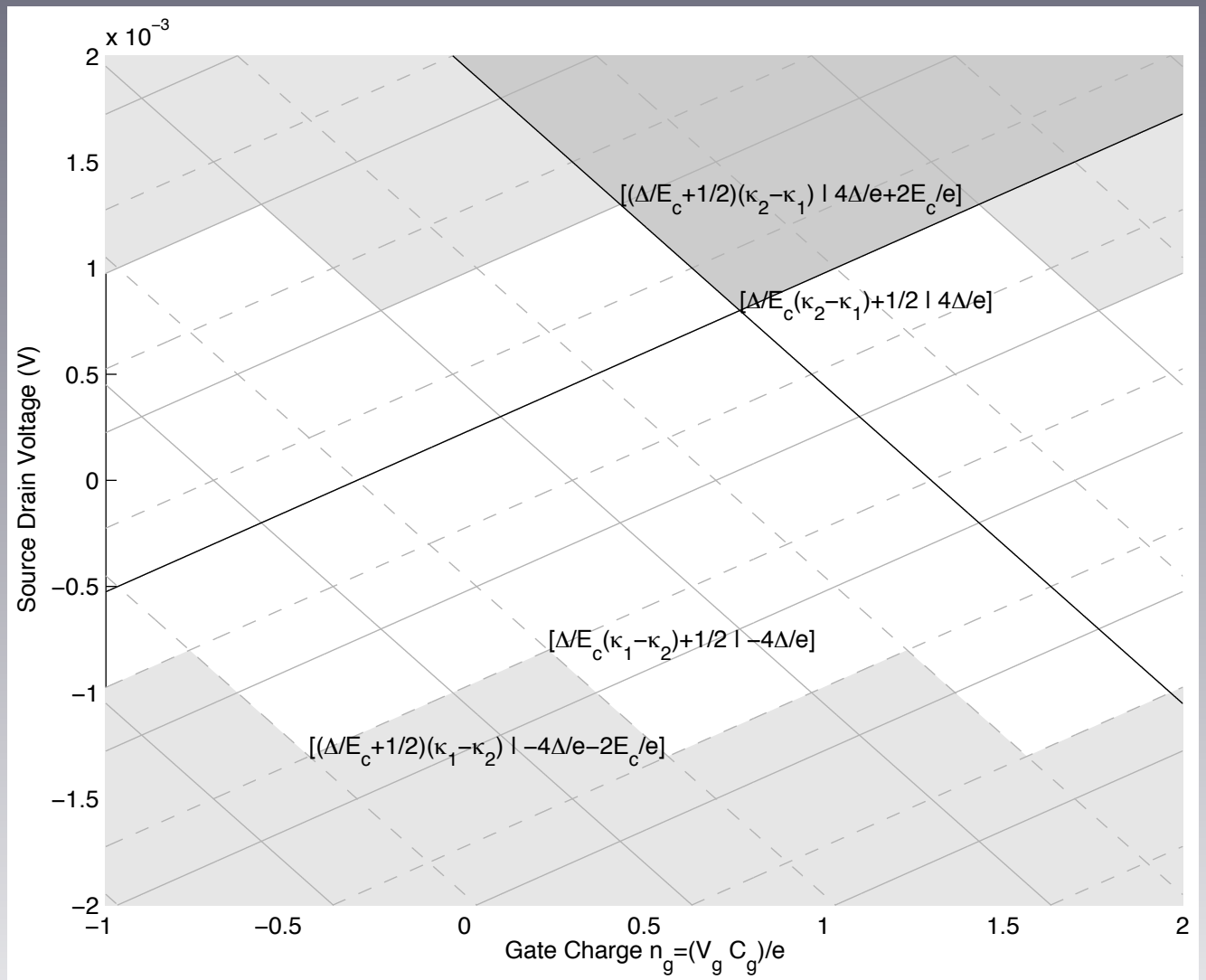
SCIENCE • VOL. 280 • 22 MAY 1998 • www.sciencemag.org

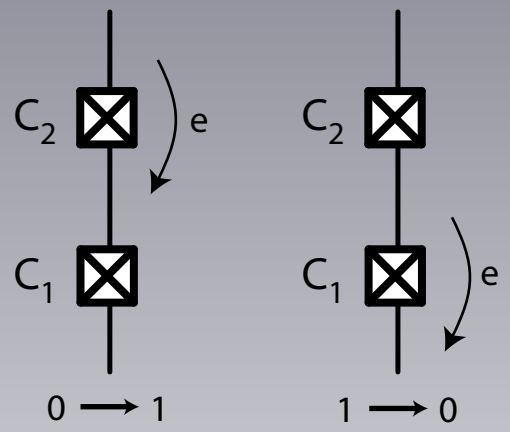


LC tank circuit, impedance transformer

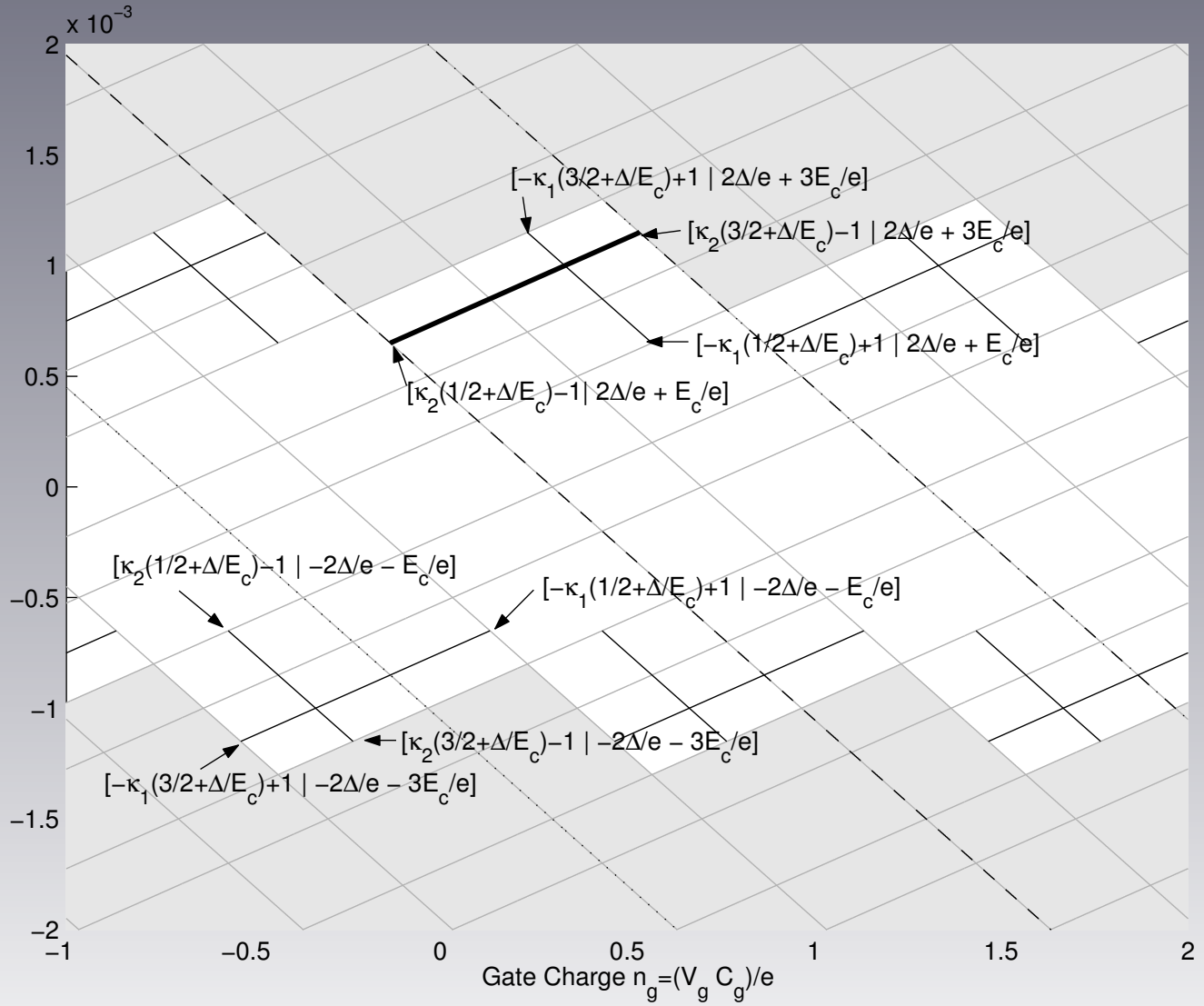

x 10^−3
1
0.8
0.6
0.4
0.2
0
−0.2
−0.4
−0.6
−0.8
−1
Source Drain Voltage (V)
[(κ2−κ1)/2 I 2Ec/e]
[1/2 I 0]
[(κ1−κ2)/2 I −2Ec/e]
−1
−0.5
0
0.5
1
1.5
2
Gate Charge ng=(Vg Cg)/e

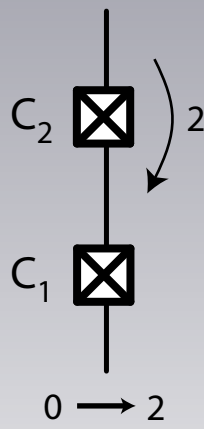
Superconducting SET

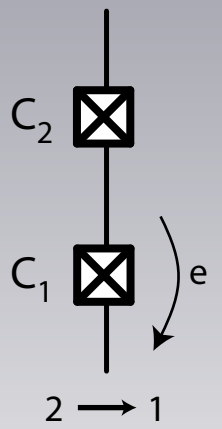


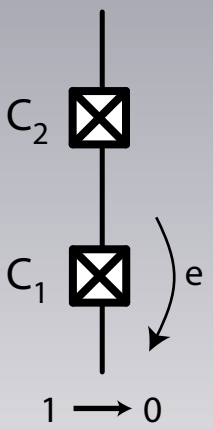


Josephson quasi particle cycle

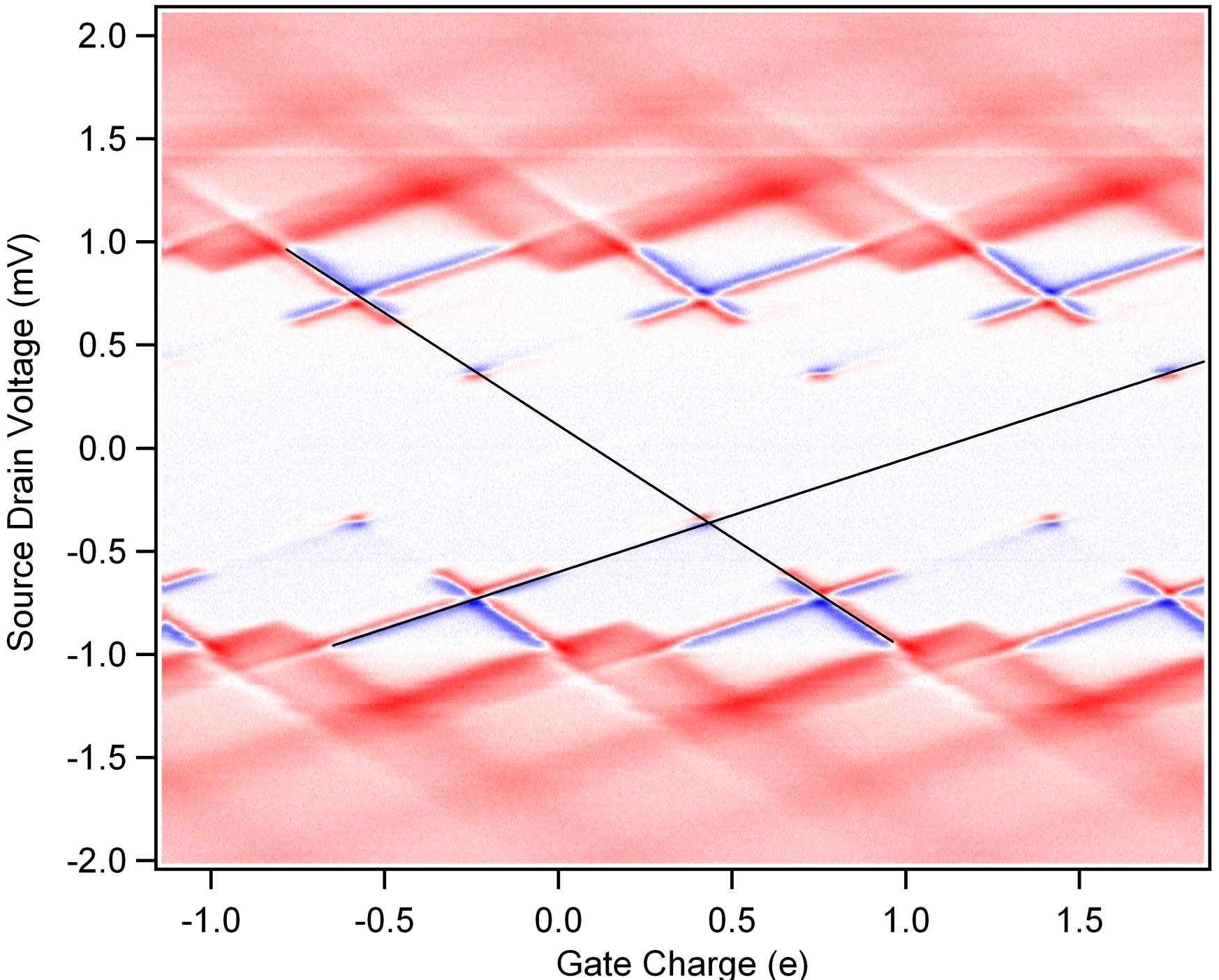








Superconducting RF-SET



Coherent control of macroscopic quantum states in a single-Cooper-pair box

Y. Nakamura*, Yu. A. Pashkin† & J. S. Tsai*

* *NEC Fundamental Research Laboratories, Tsukuba, Ibaraki 305-8051, Japan*
† *CREST, Japan Science and Technology Corporation (JST), Kawaguchi, Saitama 332-0012, Japan*