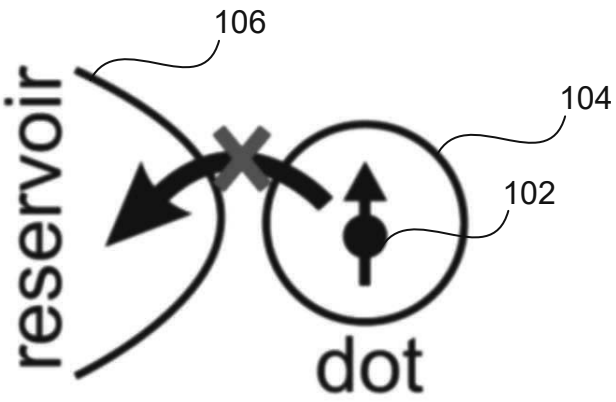



Fig. 1A

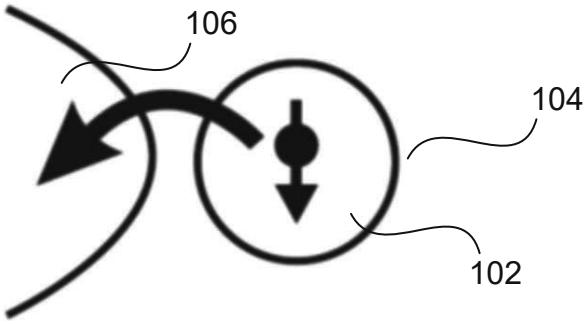



Fig. 1B

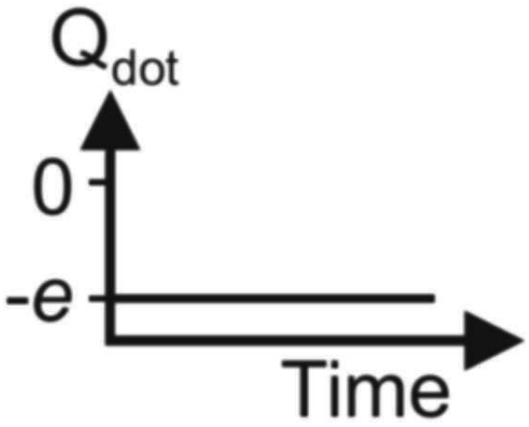



Fig. 1C

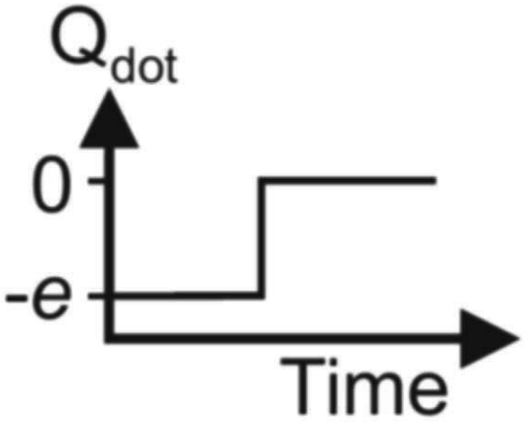



Fig. 1D

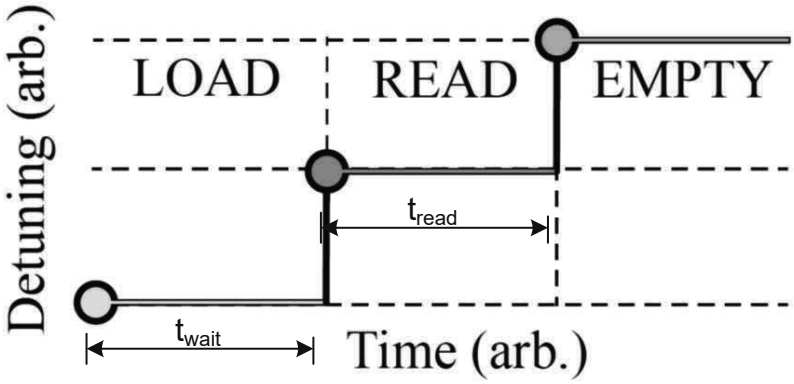



Fig. 1E

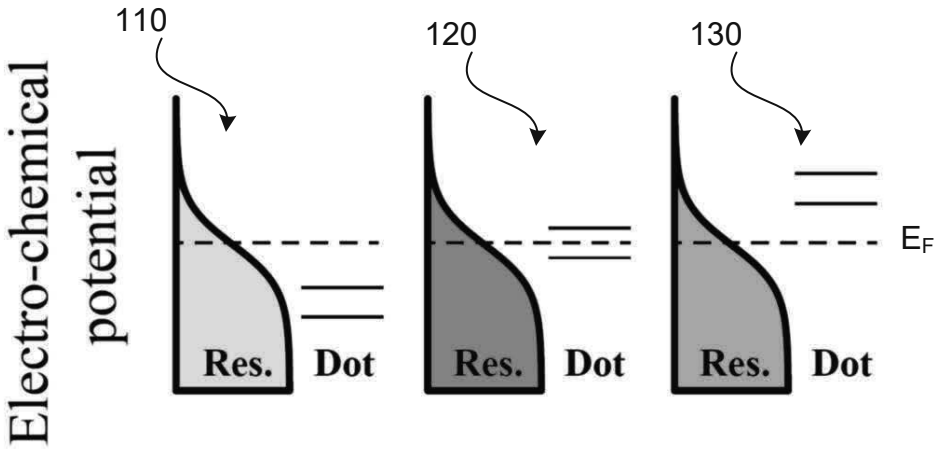



Fig. 1F

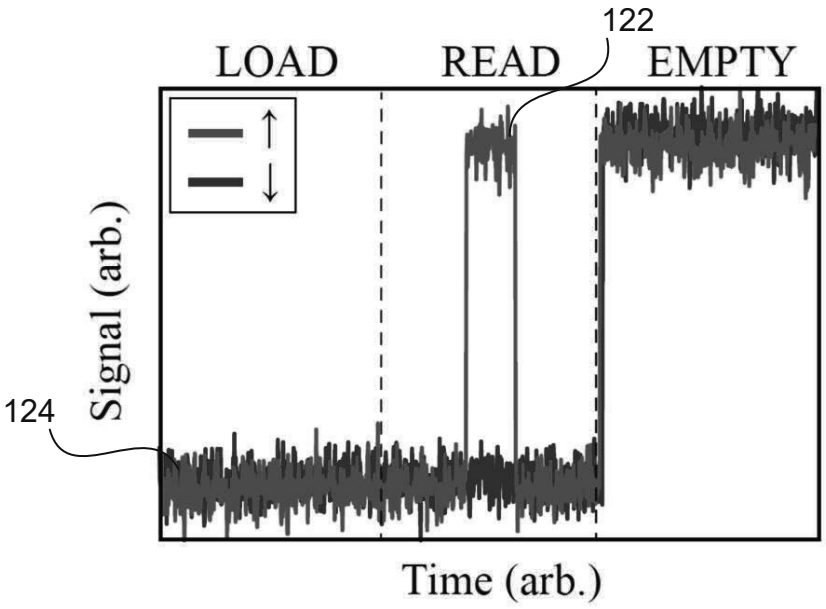



Fig. 1G

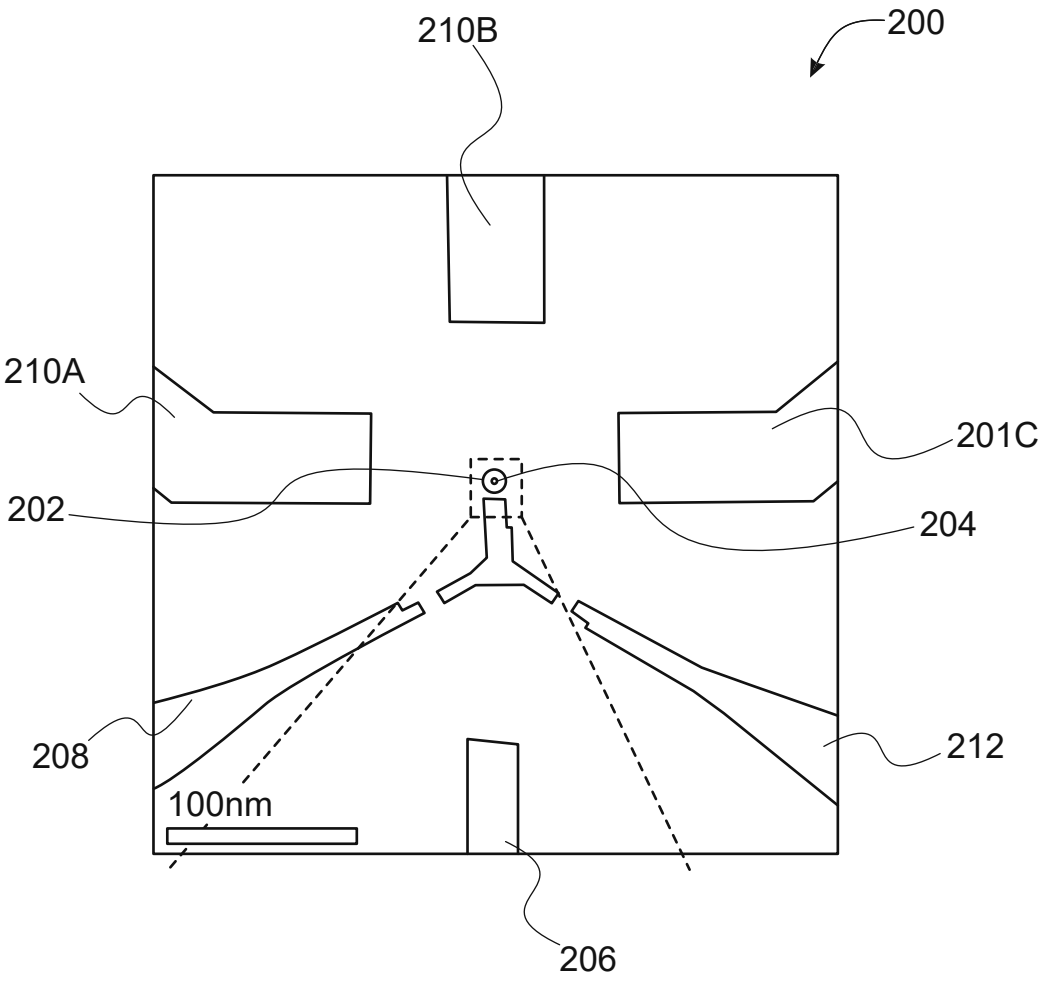



**Fig. 2**

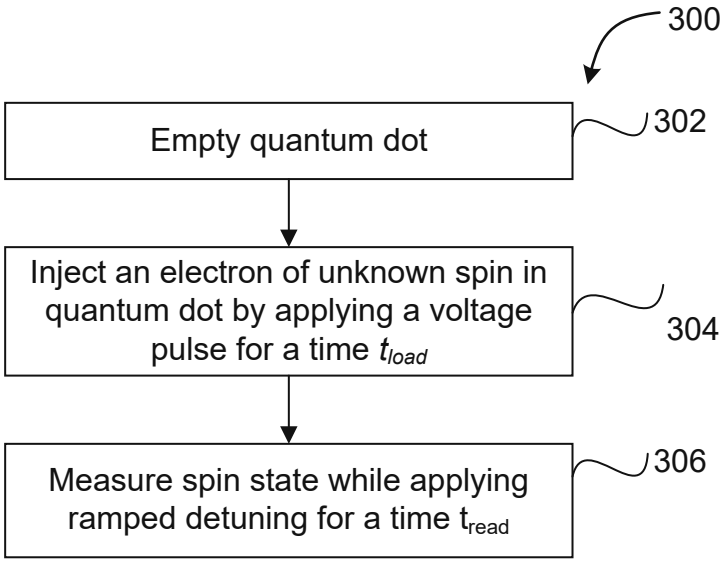



Fig. 3

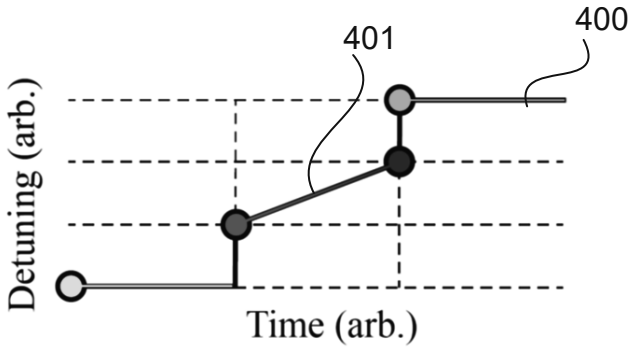



Fig. 4A

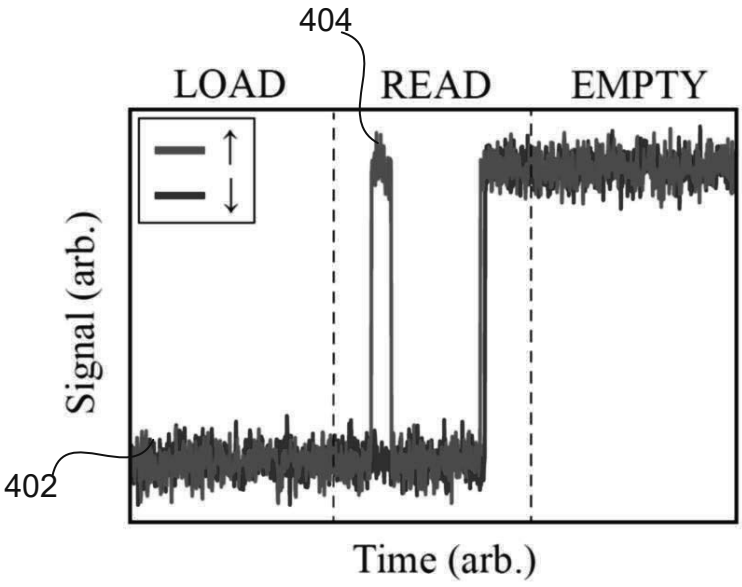



Fig. 4B

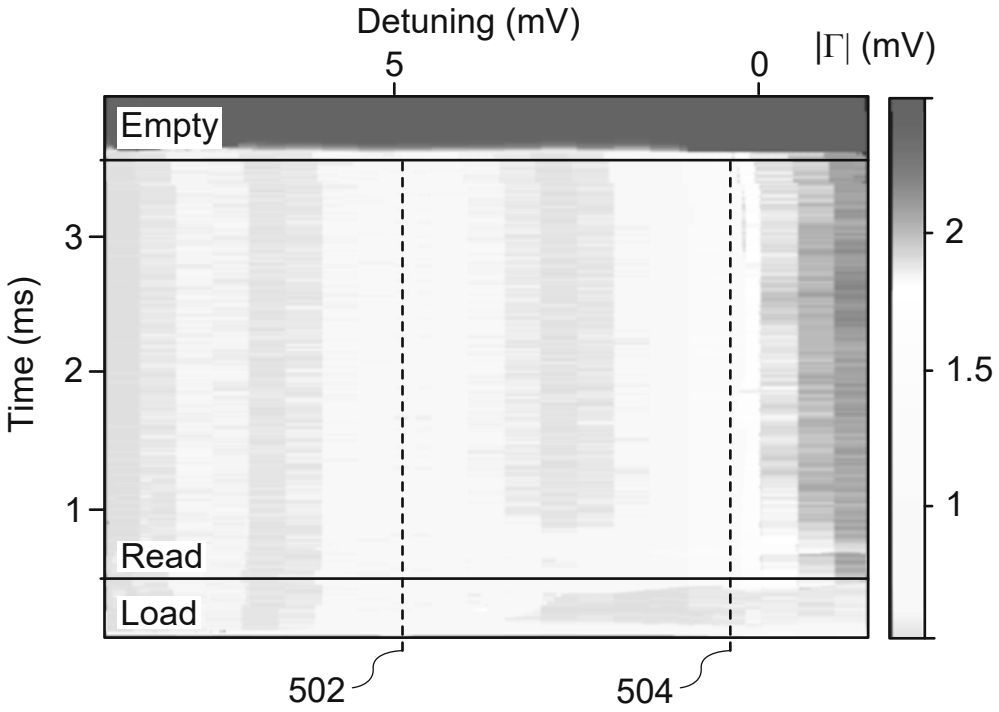

Detuning (mV)
5
0
|Γ| (mV)
Empty
Read
Load
Time (ms)
3
2
1
2
1.5
1
502
504

Fig. 5A

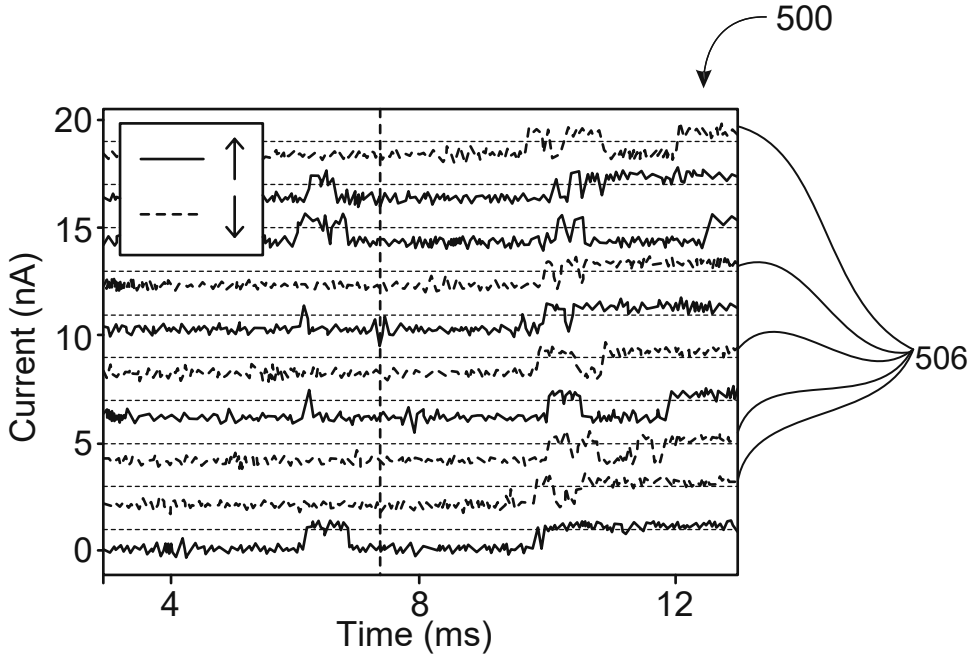

500
20
15
10
5
0
Current (nA)
4
8
12
Time (ms)
506

Fig. 5B

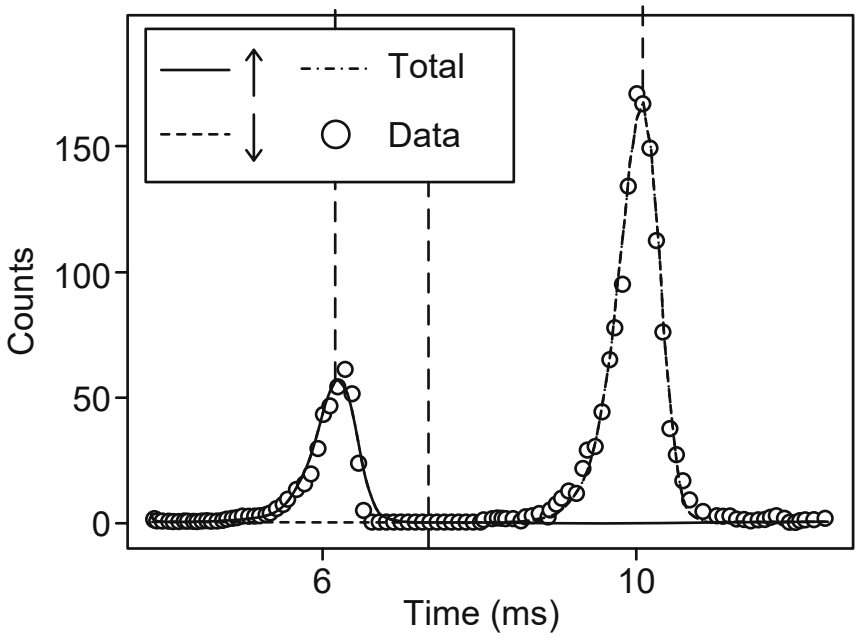

Total
Data
Counts
150
100
50
0
6
10
Time (ms)

Fig. 5C

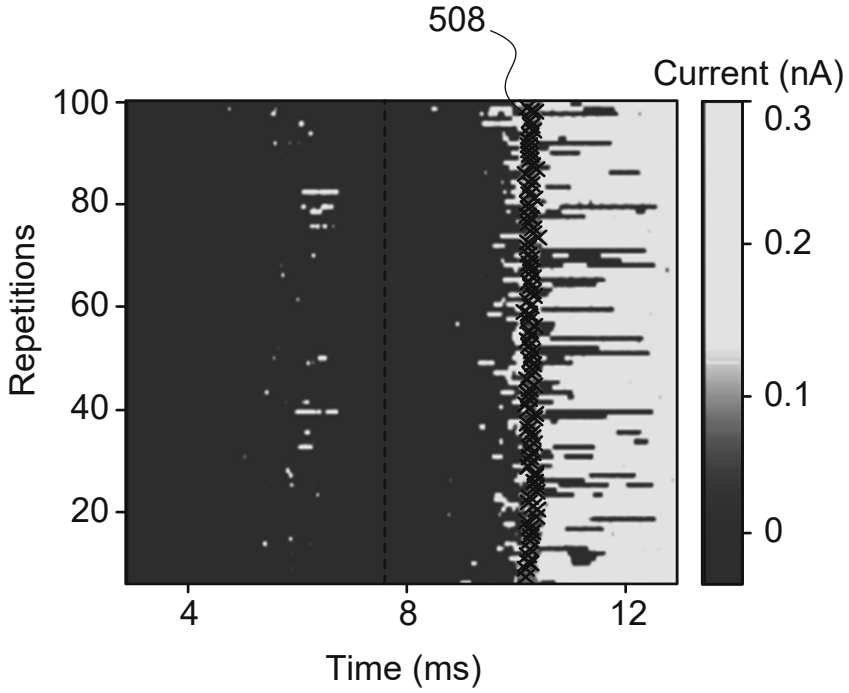

508
Current (nA)
0.3
0.2
0.1
0
Repetitions
100
80
60
40
20
4
8
12
Time (ms)

Fig. 5D

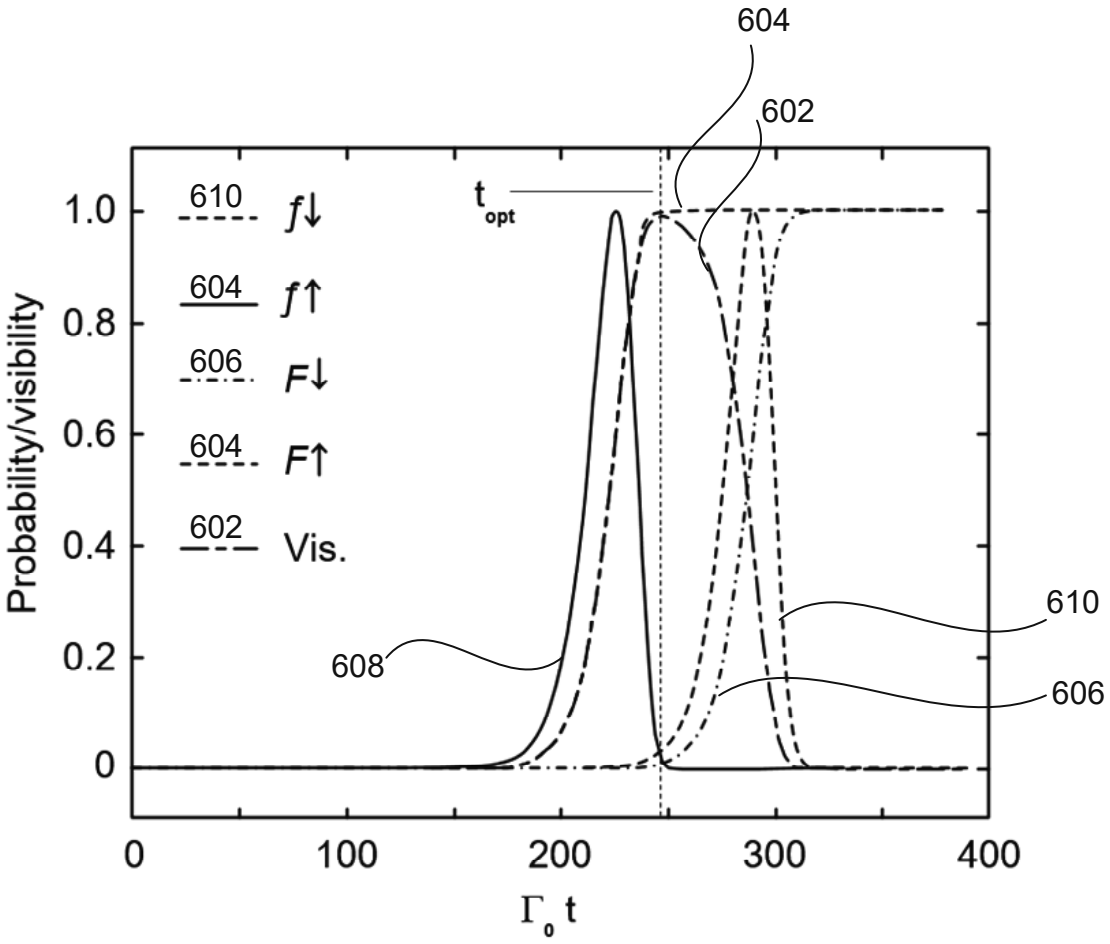

604
602
610
f↓
604
f↑
606
F↓
604
F↑
602
Vis.
t opt
608
610
606
Probability/visibility
1.0
0.8
0.6
0.4
0.2
0
0
100
200
300
400
Γ0 t

Fig. 6A

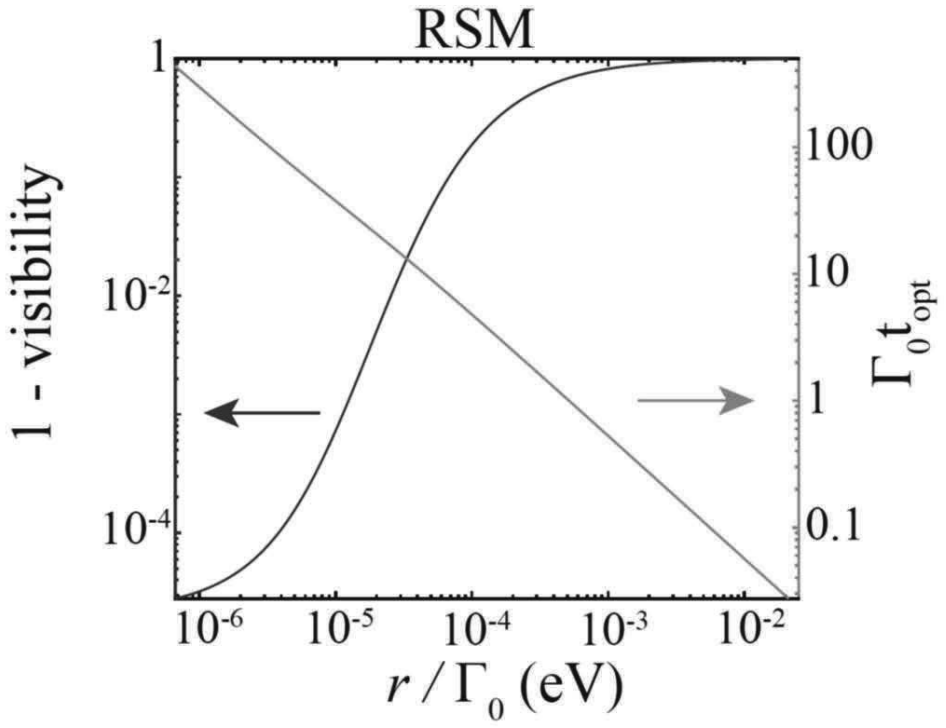

RSM
1
10-2
10-4
1 - visibility
100
10
1
0.1
Γ0 topt
10-6
10-5
10-4
10-3
10-2
r / Γ0 (eV)

Fig. 6B

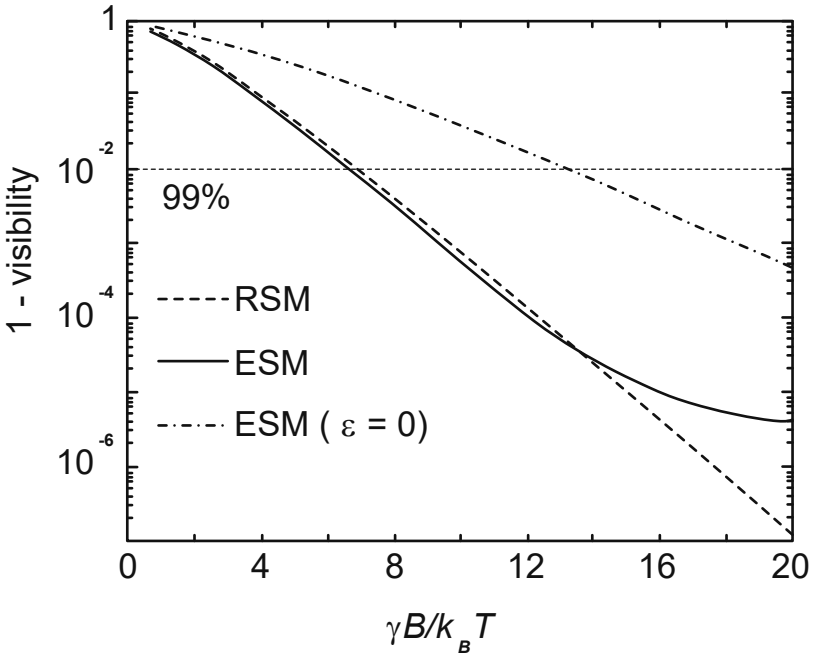

1
10^-2
10^-4
10^-6
1 - visibility
99%
RSM
ESM
ESM ( ε = 0)
0
4
8
12
16
20
γB/k_BT

Fig. 6C

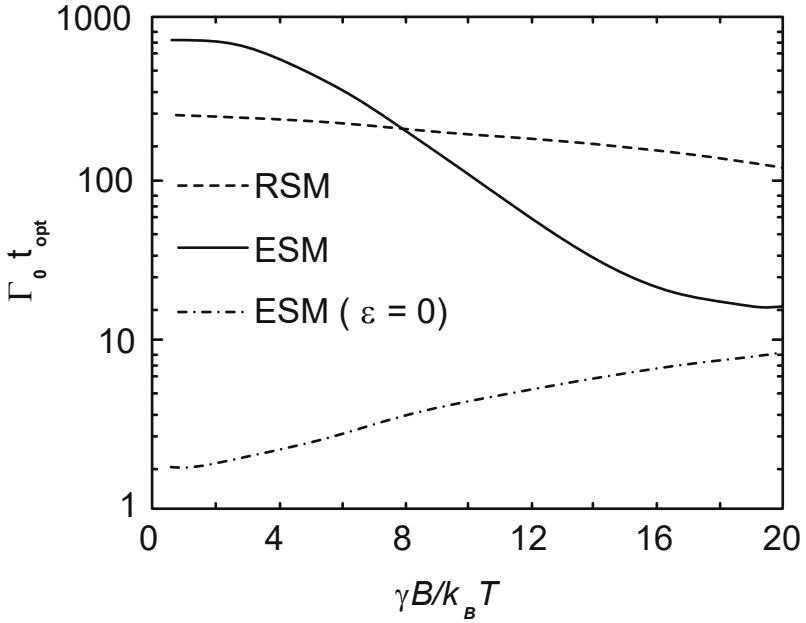

1000
100
10
1
Γ_0 t_opt
RSM
ESM
ESM ( ε = 0)
0
4
8
12
16
20
γB/k_BT

Fig. 6D

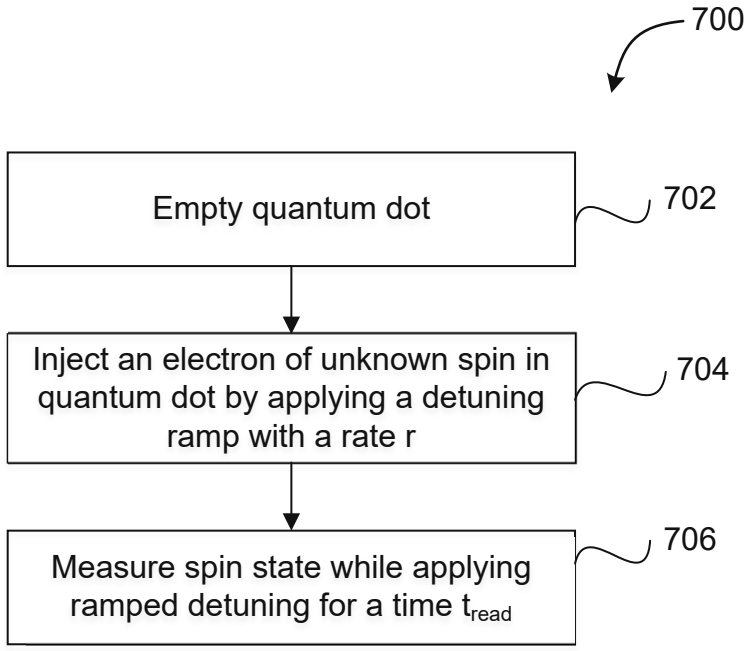

700
Empty quantum dot
702
Inject an electron of unknown spin in quantum dot by applying a detuning ramp with a rate r
704
Measure spin state while applying ramped detuning for a time $t_{read}$
706

Fig. 7

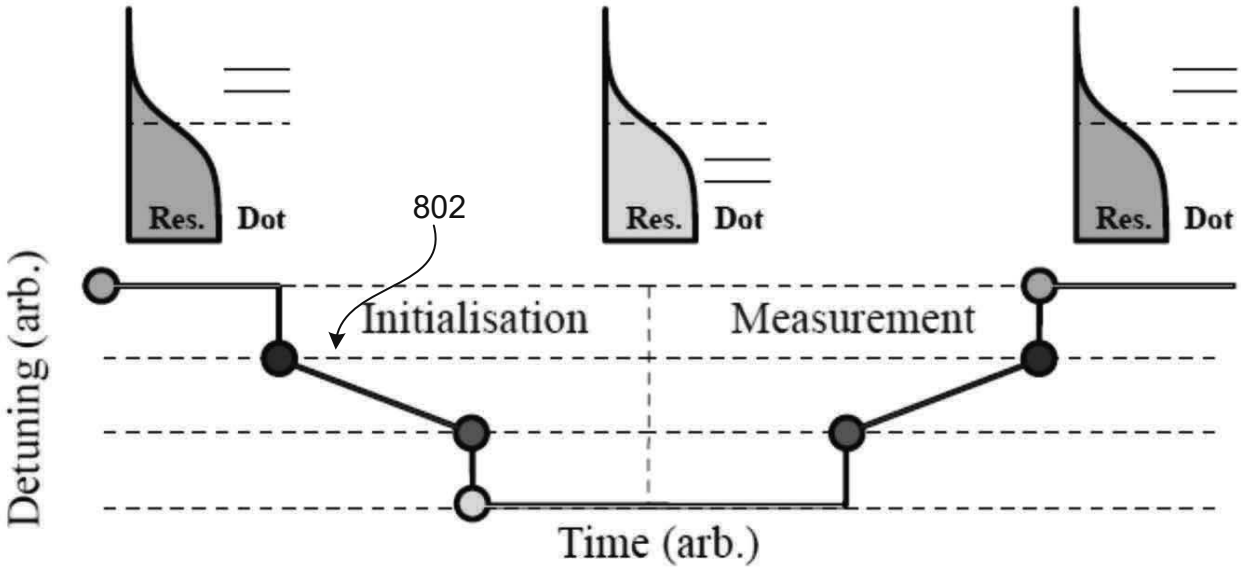

Res.
Dot
802
Initialisation
Measurement
Detuning (arb.)
Time (arb.)

Fig. 8

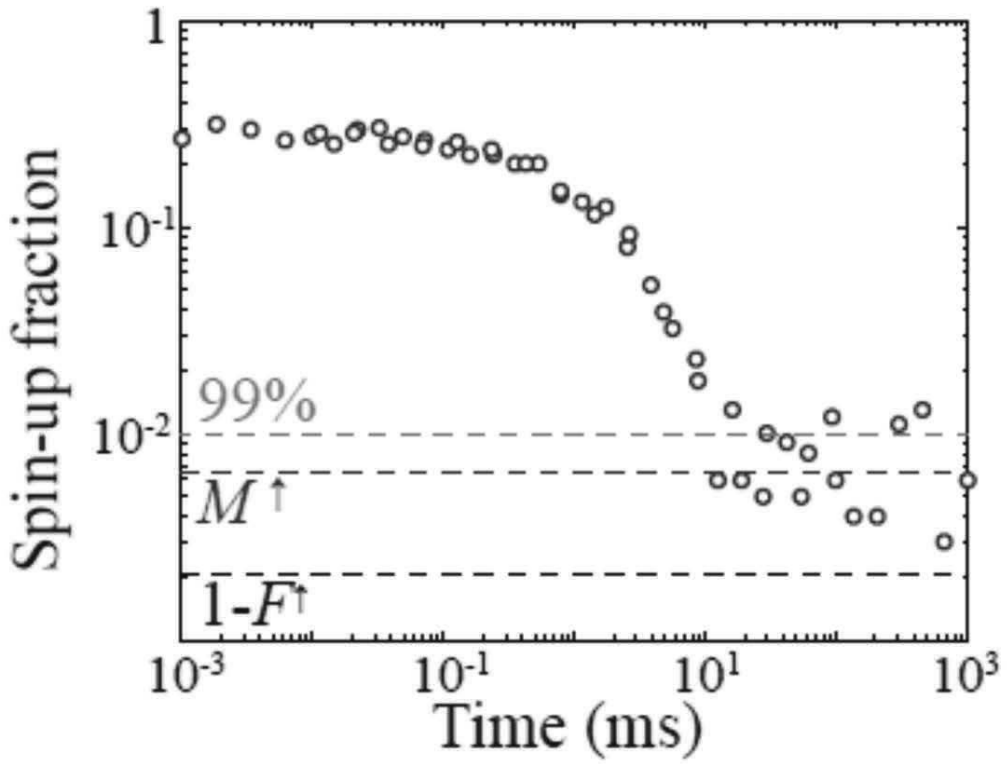

Spin-up fraction
1
$10^{-1}$
$10^{-2}$
99%
$M^{\uparrow}$
$1\text{-}F^{\uparrow}$
$10^{-3}$
$10^{-1}$
$10^{1}$
$10^{3}$
Time (ms)

**Fig. 9A**

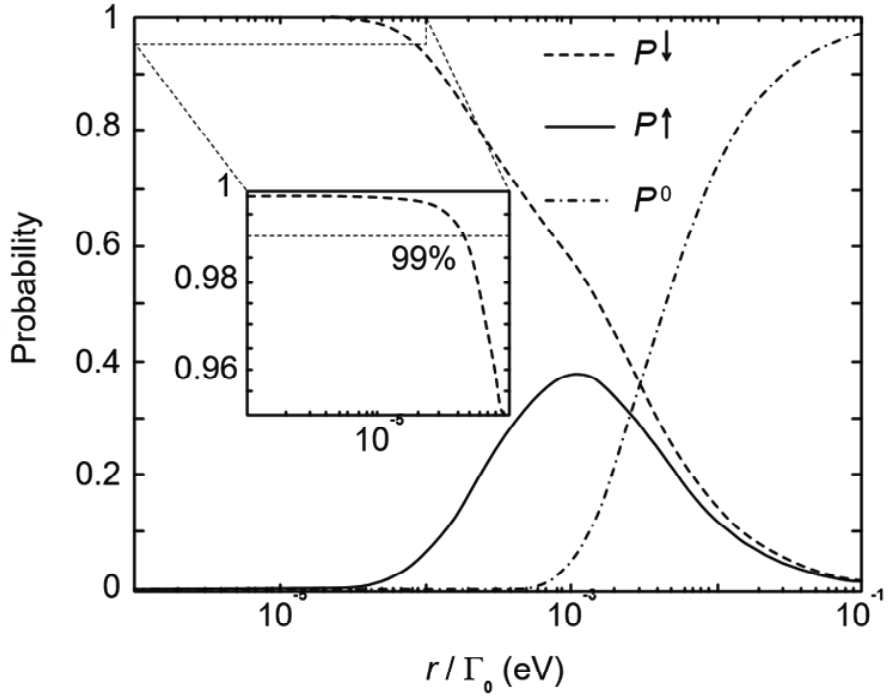

Probability
1
0.8
0.6
0.4
0.2
0
$P\downarrow$
$P\uparrow$
$P^0$
1
0.98
0.96
99%
$10^{-5}$
$10^{-5}$
$10^{-3}$
$10^{-1}$
$r / \Gamma_0$ (eV)

**Fig. 9B**

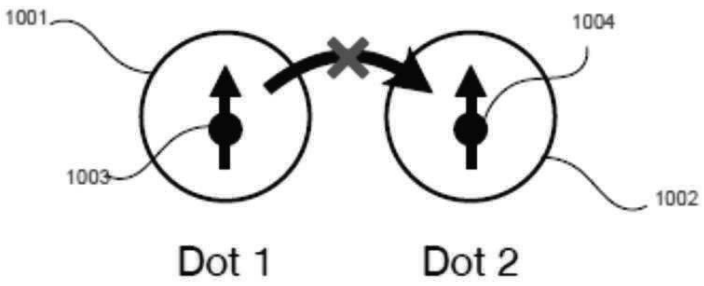



Fig. 10A

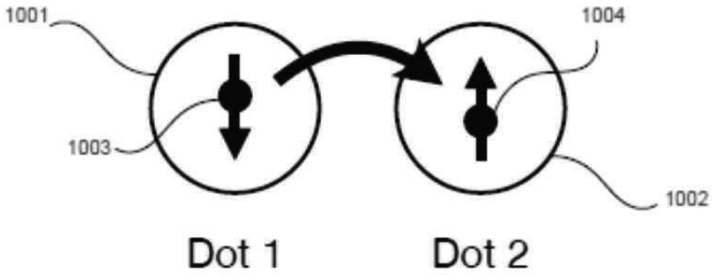



Fig. 10B

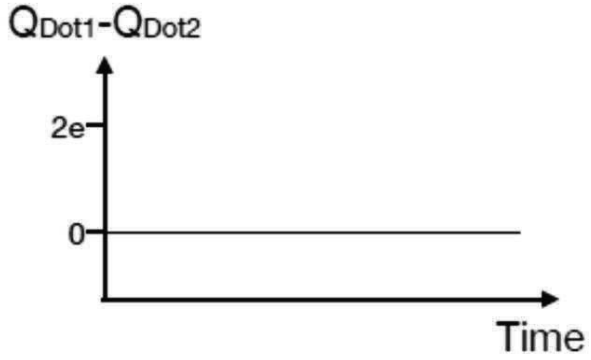



Fig. 10C

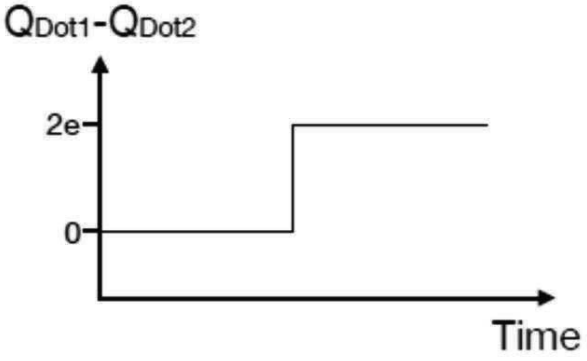



Fig. 10D

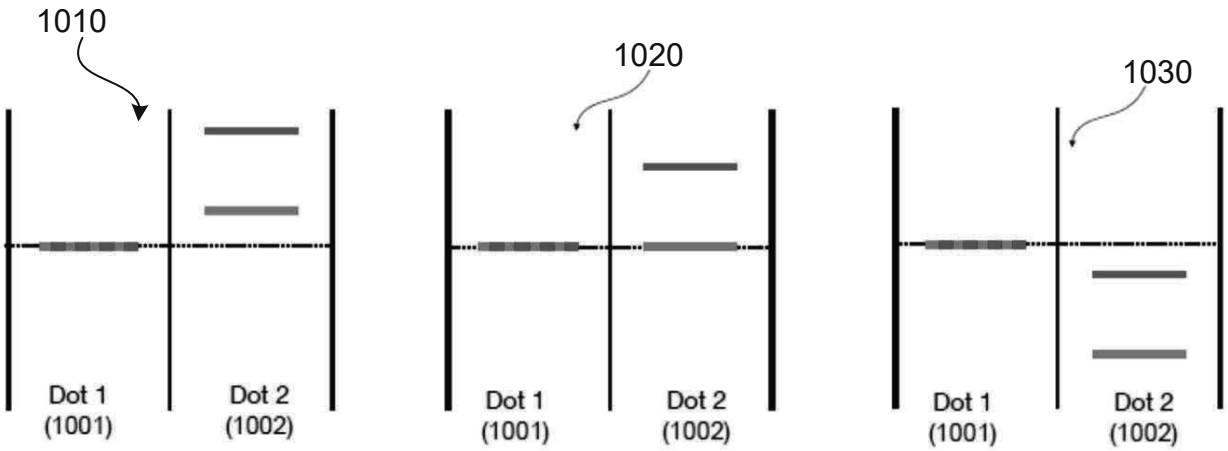



Fig. 10E

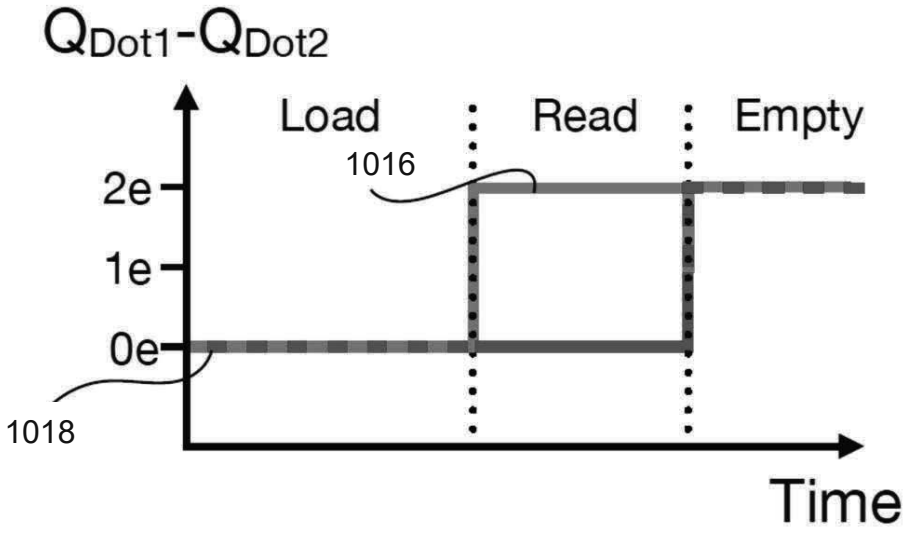



Fig. 10F

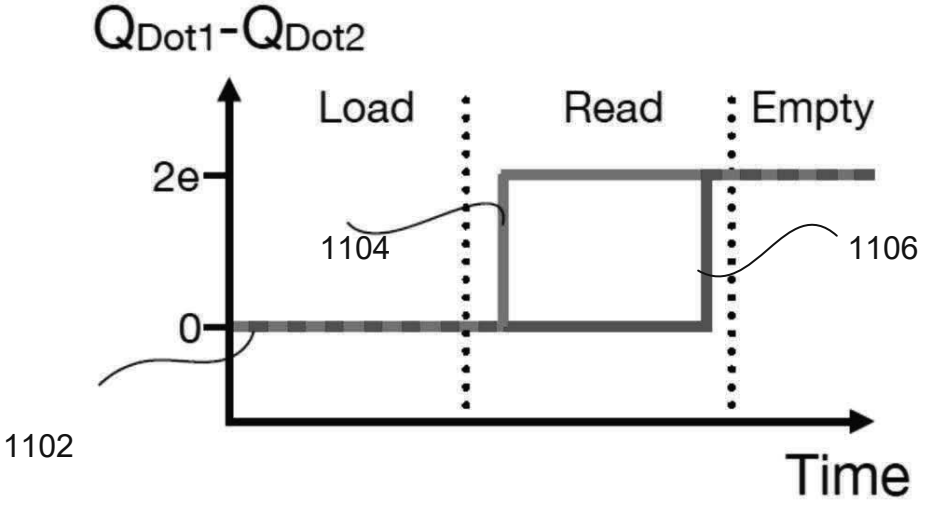



Fig. 11A

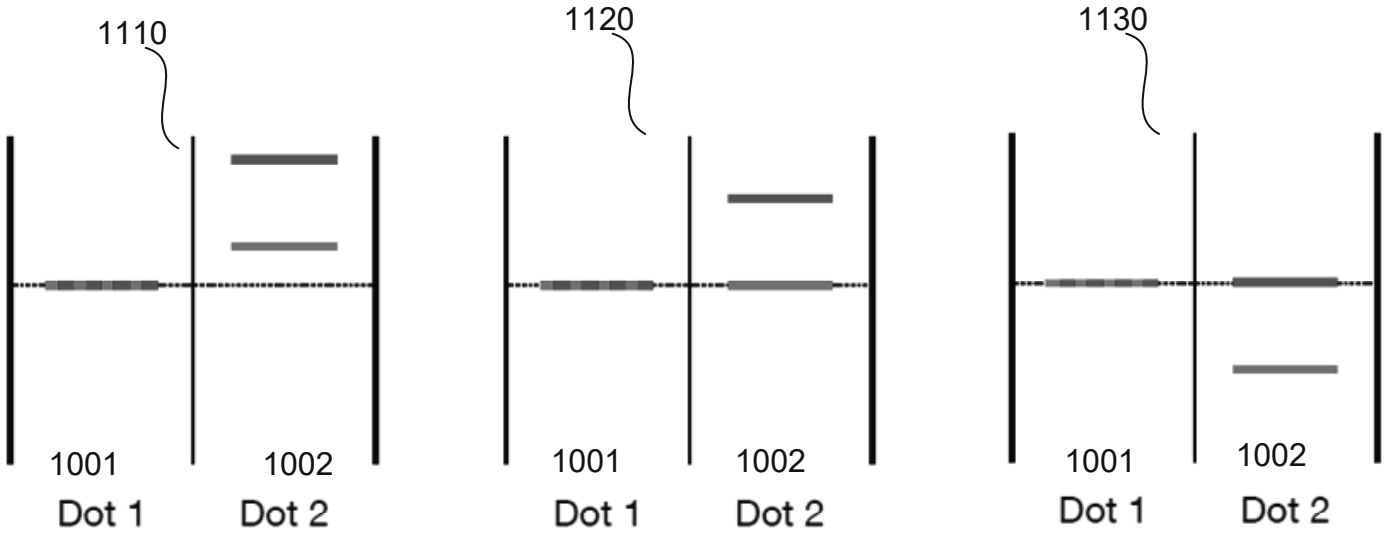



Fig. 11B

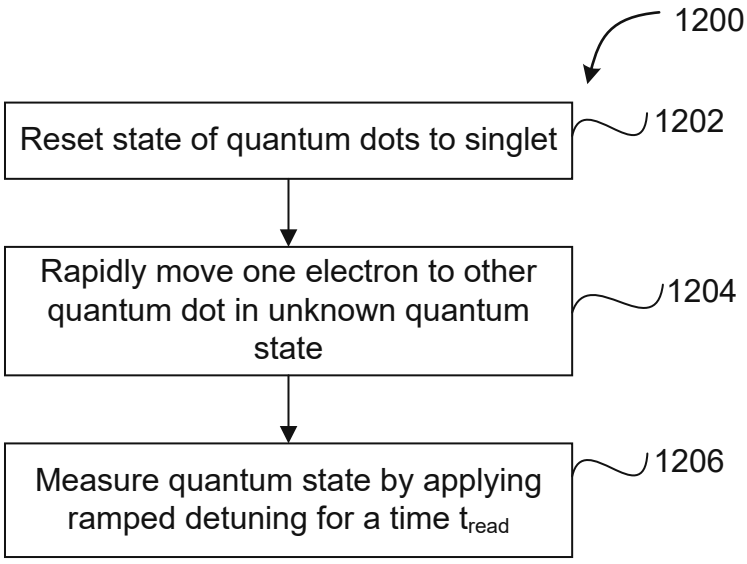

1200
Reset state of quantum dots to singlet
1202
Rapidly move one electron to other quantum dot in unknown quantum state
1204
Measure quantum state by applying ramped detuning for a time $t_{read}$
1206

Fig. 12

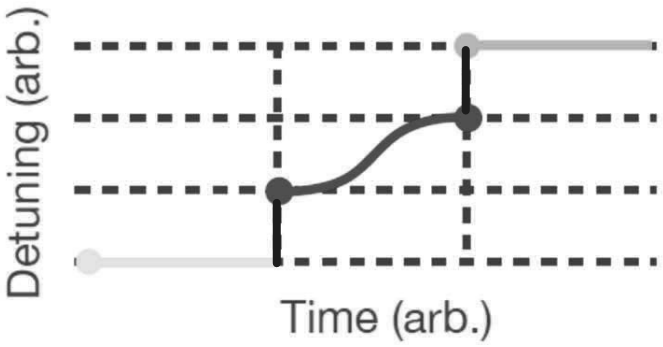

Detuning (arb.)
Time (arb.)

Fig. 13