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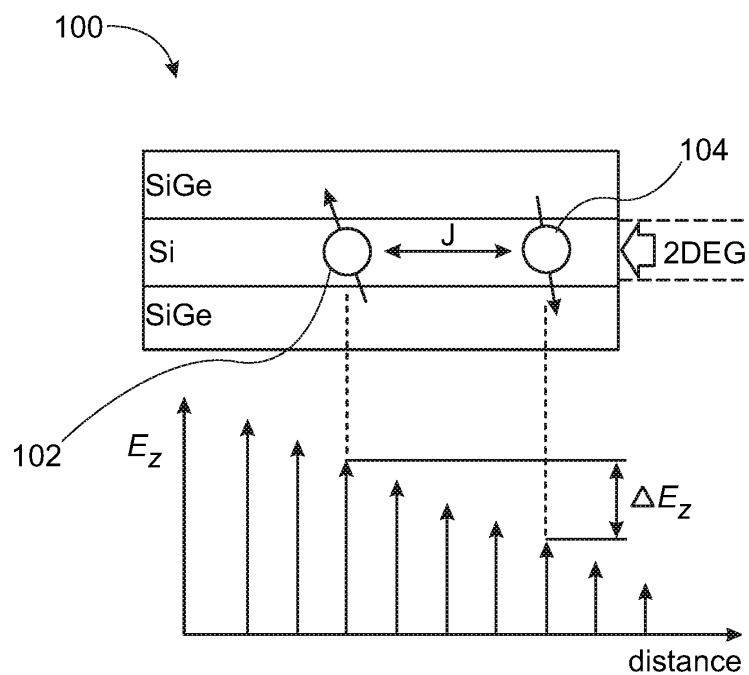


FIG. 1

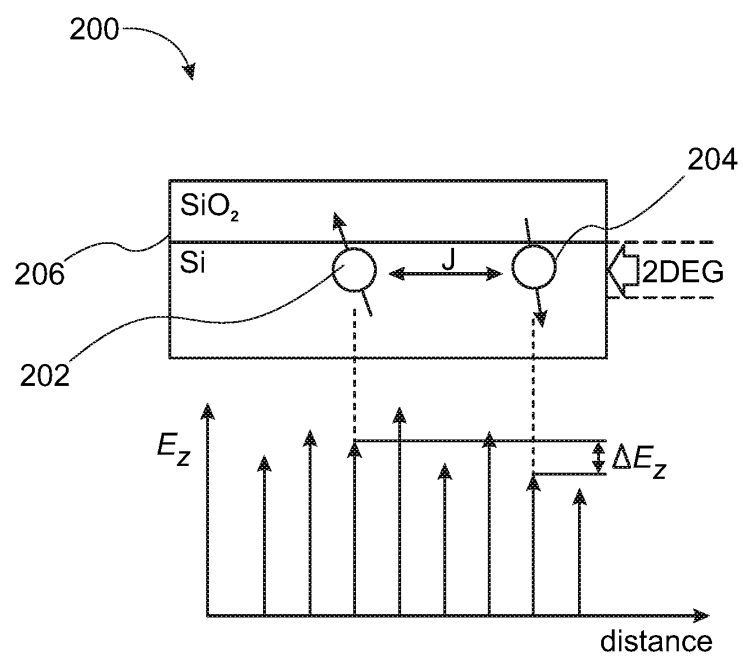


FIG. 2

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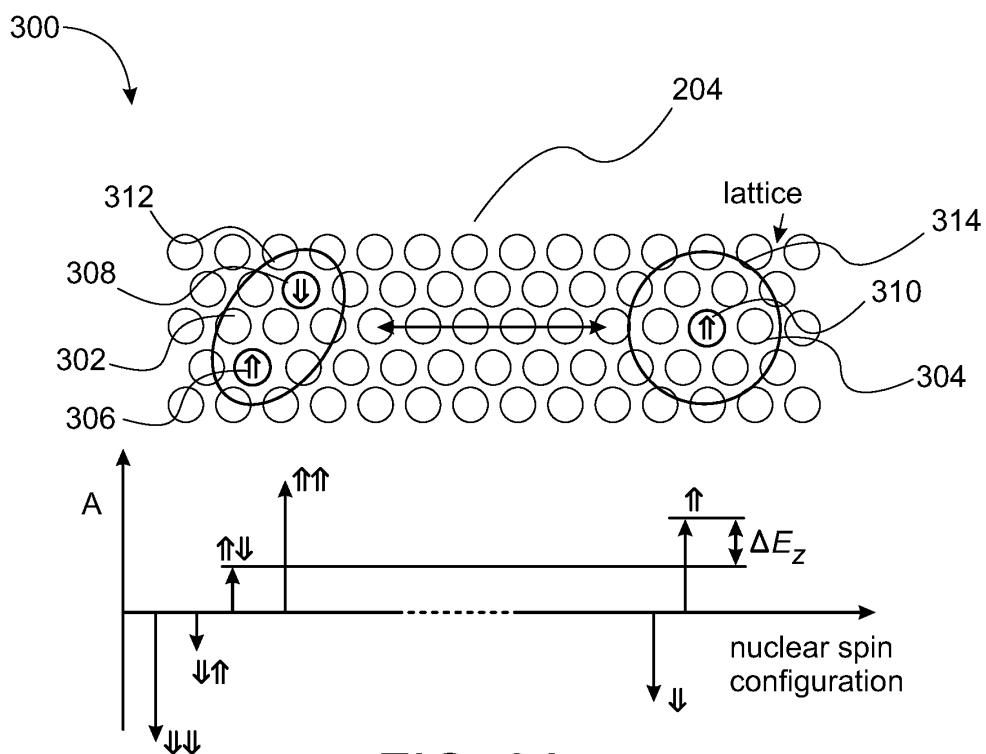


FIG. 3A

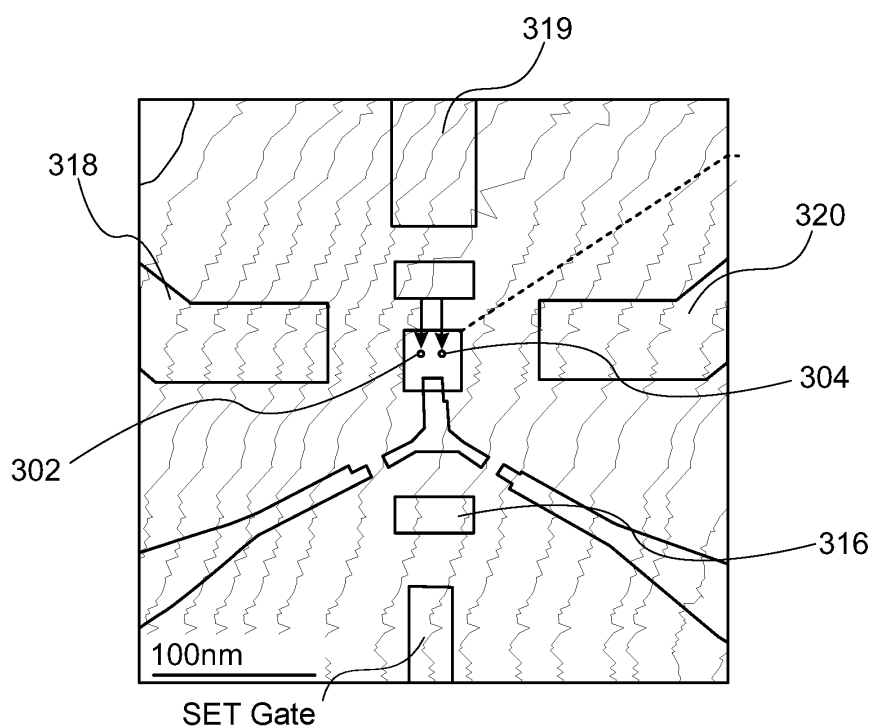


FIG. 3B

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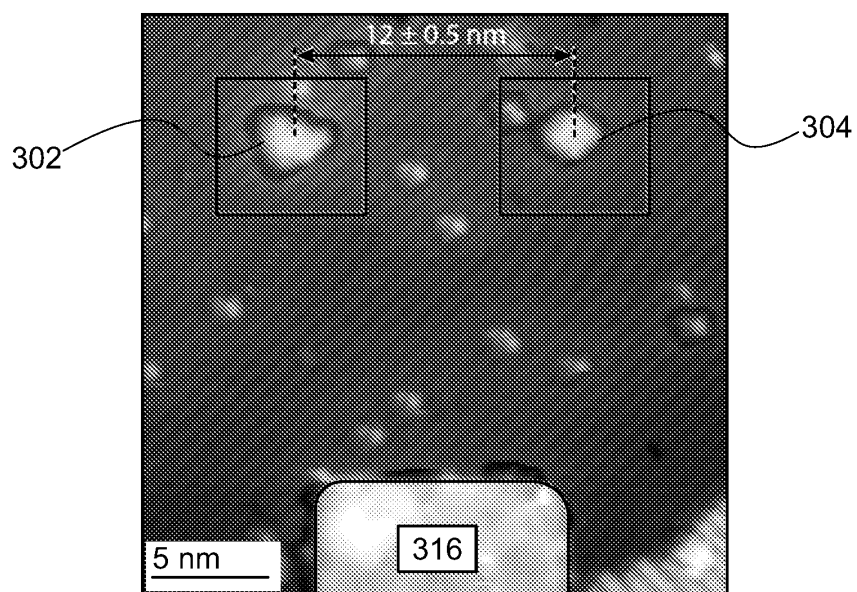


FIG. 3C

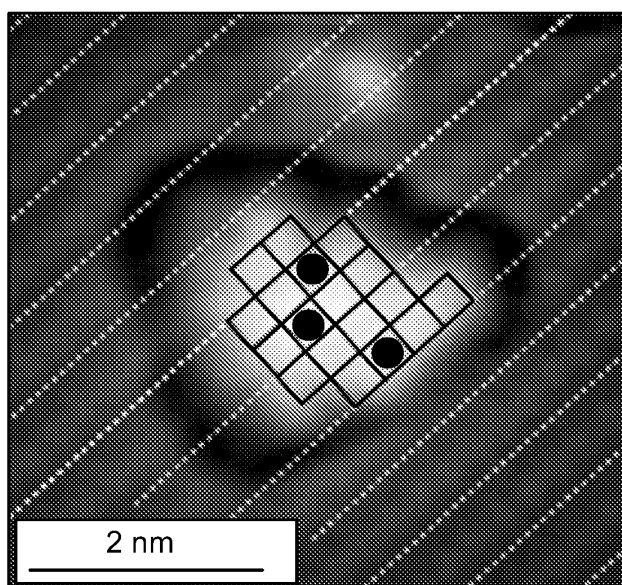


FIG. 3D

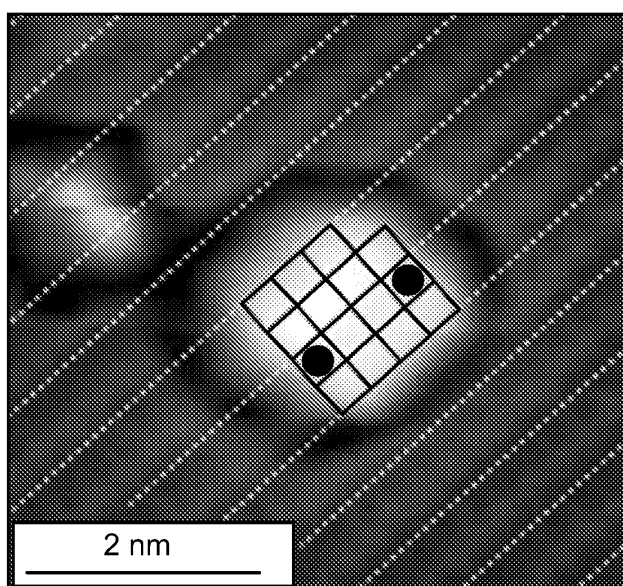


FIG. 3E

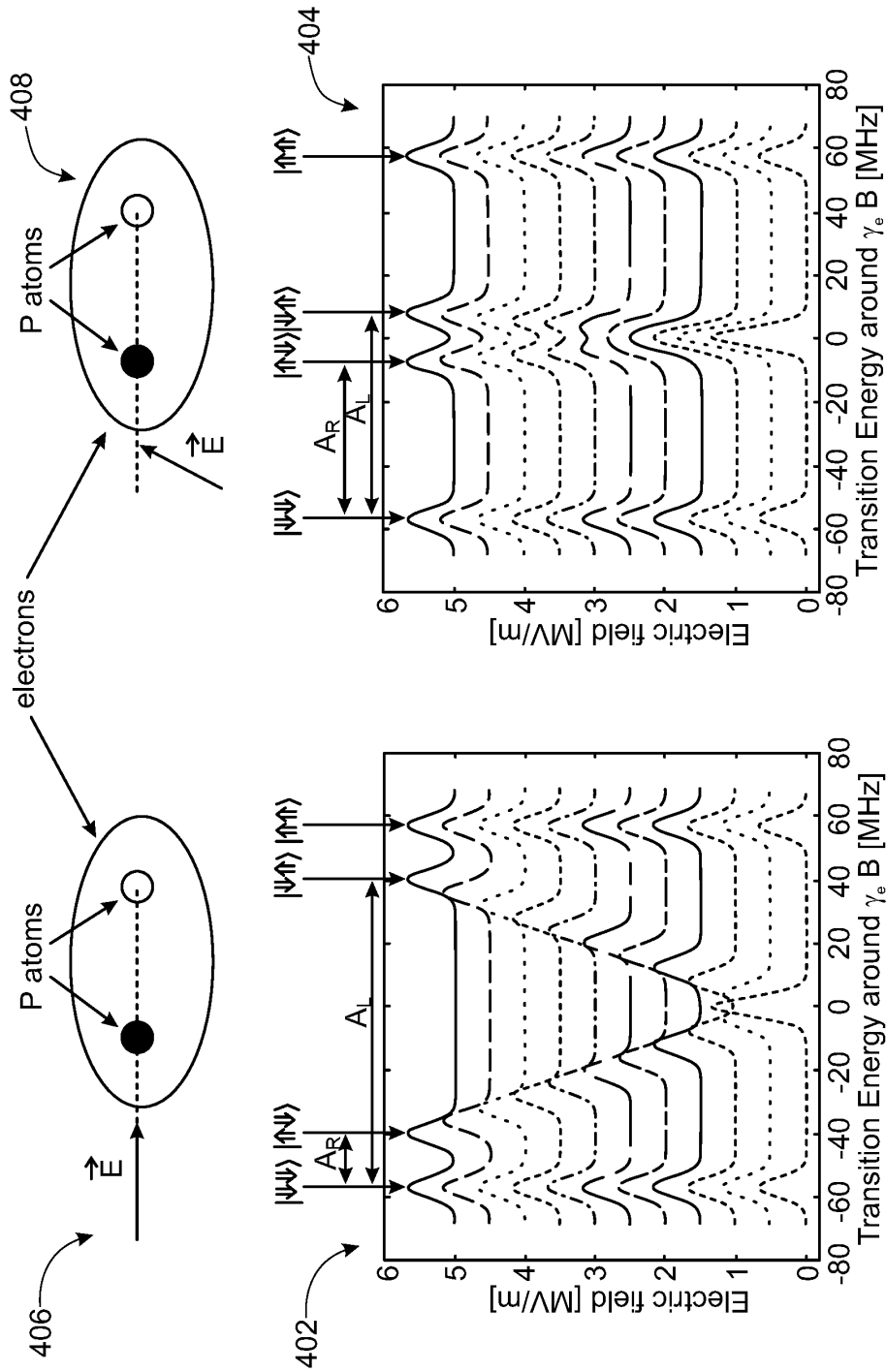


FIG. 4

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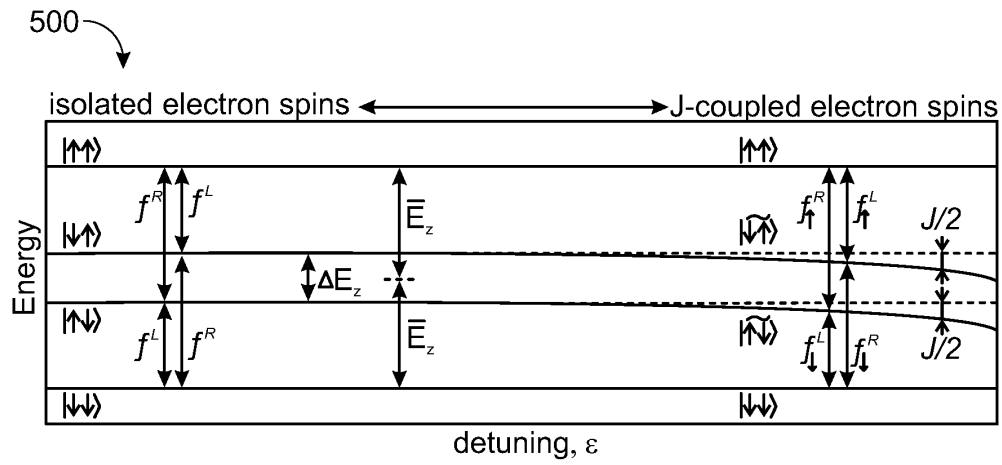


FIG. 5

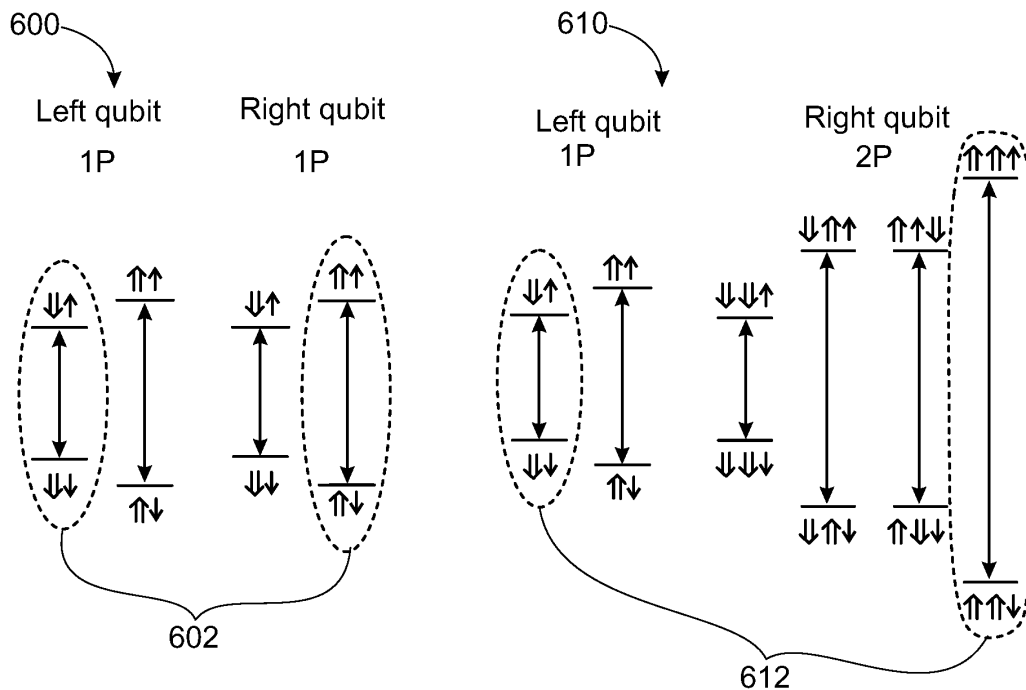


FIG. 6A

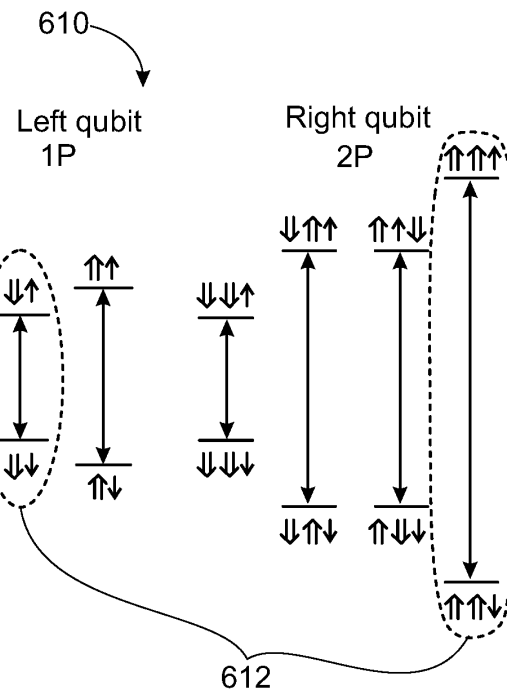


FIG. 6B

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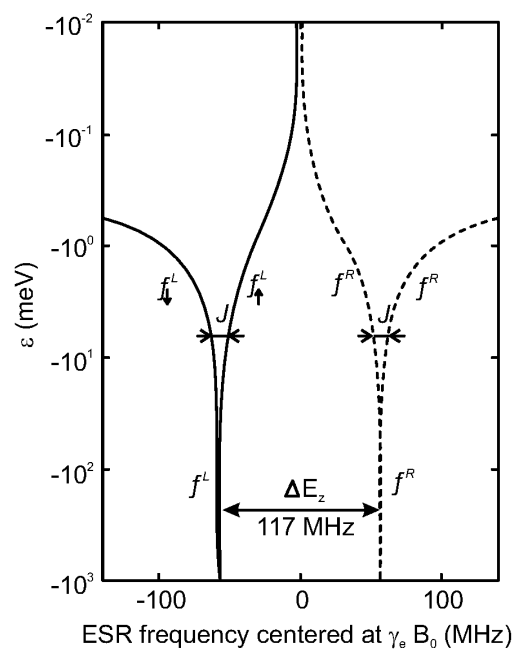


FIG. 7A

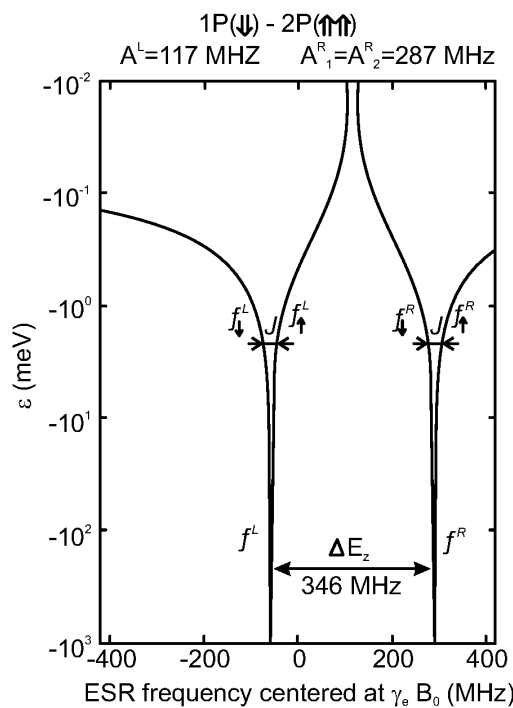


FIG. 7B

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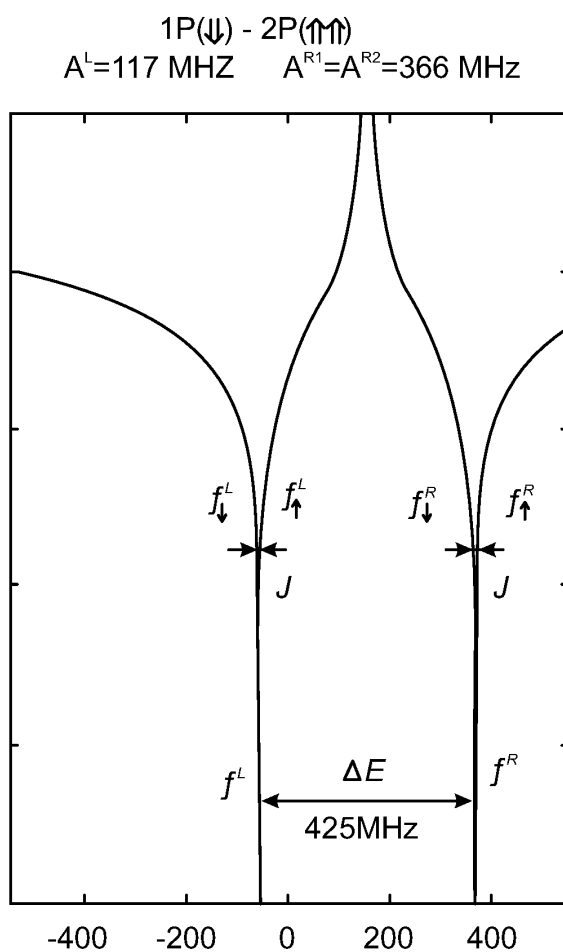
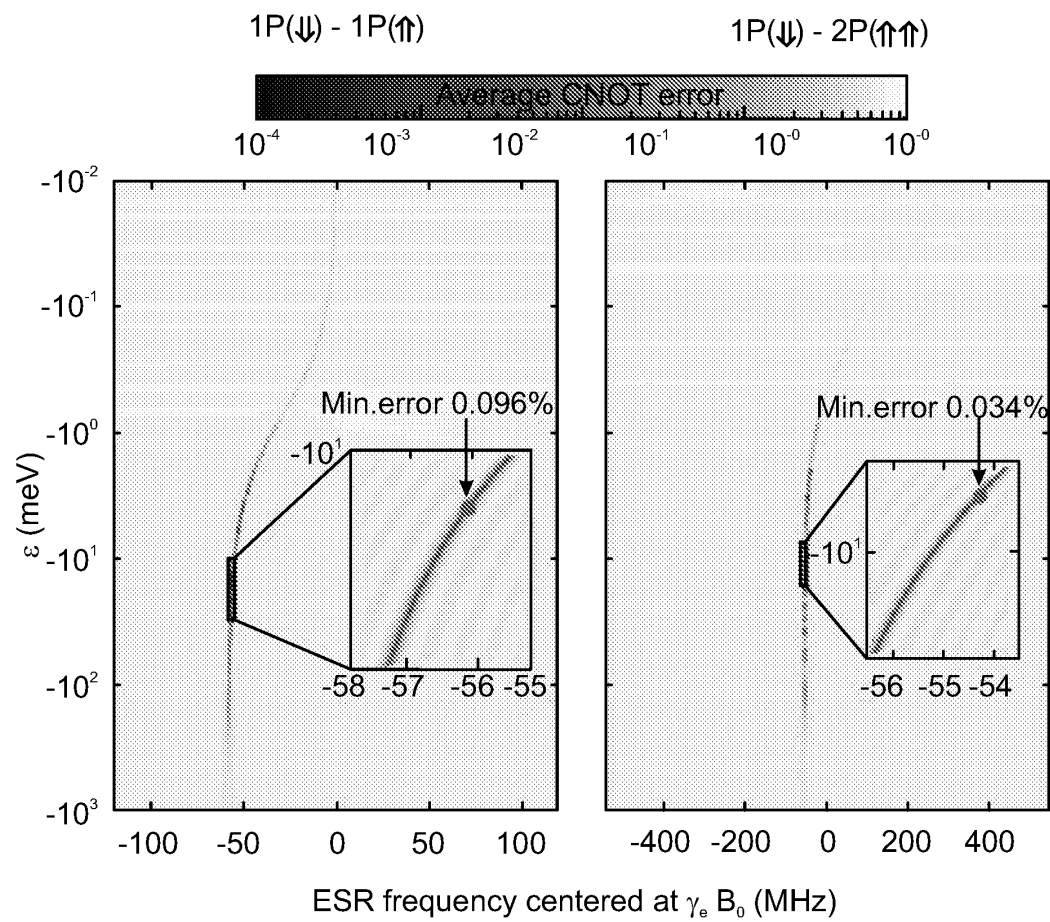


FIG. 7C



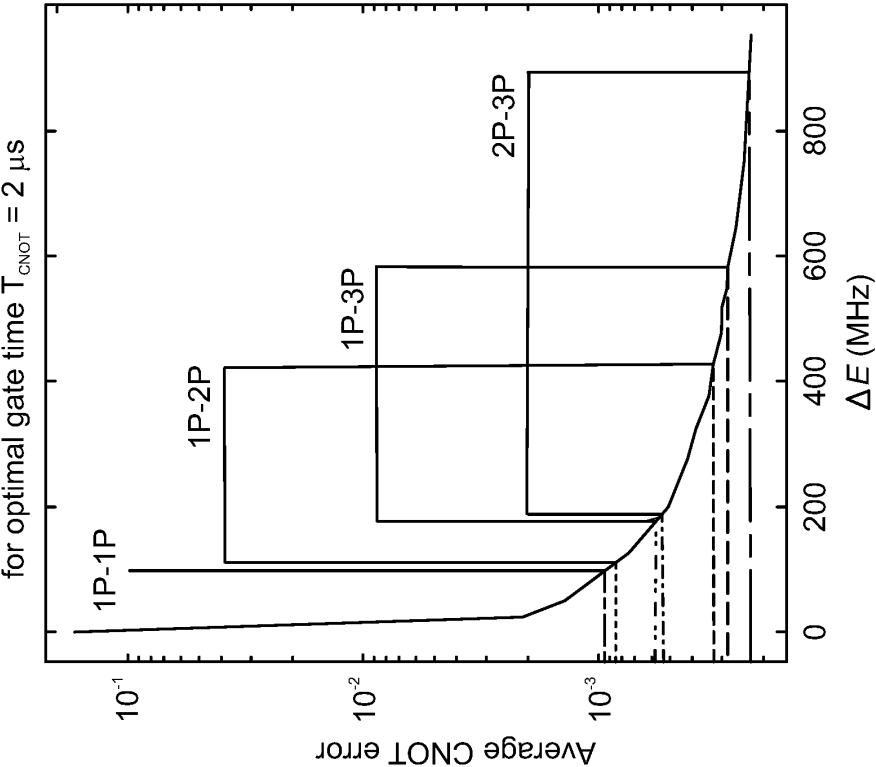


FIG. 9B

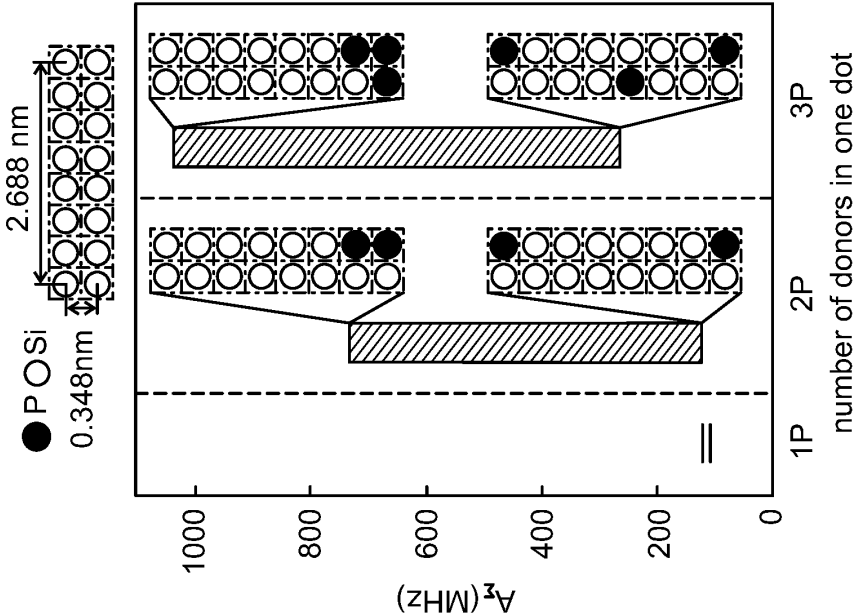


FIG. 9A

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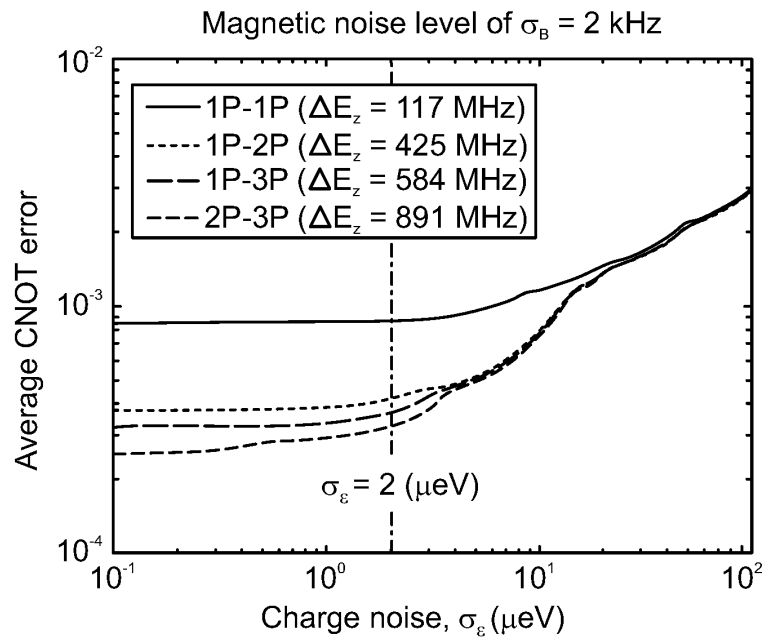


FIG. 9C

Left qubit 3P			Right qubit 2P		Nuclear spin state	ΔE_z
A_1^{3P}	A_2^{3P}	A_3^{3P}	A_1^{2P}	A_2^{2P}		
	136	164	136	366	1. $\downarrow\downarrow\downarrow\downarrow\downarrow$	174
	271	311	50	287	2. $\downarrow\downarrow\uparrow\downarrow\downarrow$	137
	264	307	23	250	3. $\downarrow\uparrow\downarrow\downarrow\downarrow$	97
	268	297	14	142	4. $\downarrow\uparrow\uparrow\downarrow\downarrow$	408
	50	271	311	139	$\vdots$	$\vdots$
	23	307	264	115	31. $\uparrow\uparrow\downarrow\uparrow\uparrow$	137
	86	177	64	103	32. $\uparrow\uparrow\uparrow\uparrow\uparrow$	174

FIG. 10A

FIG. 10B

FIG. 10C

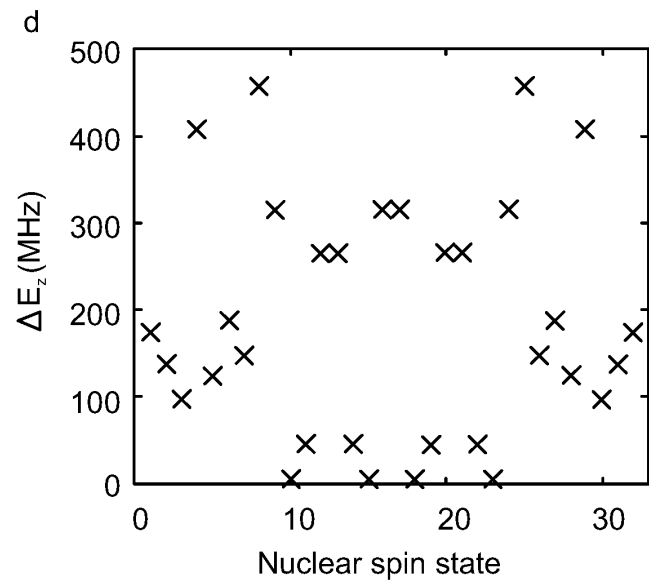


FIG. 10D

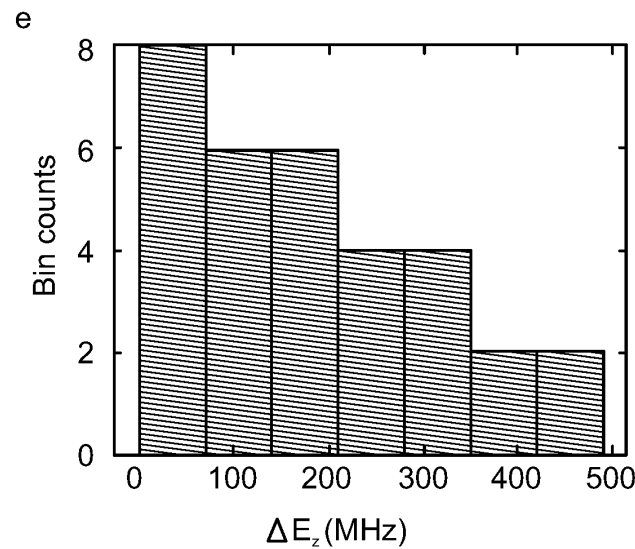


FIG. 10E

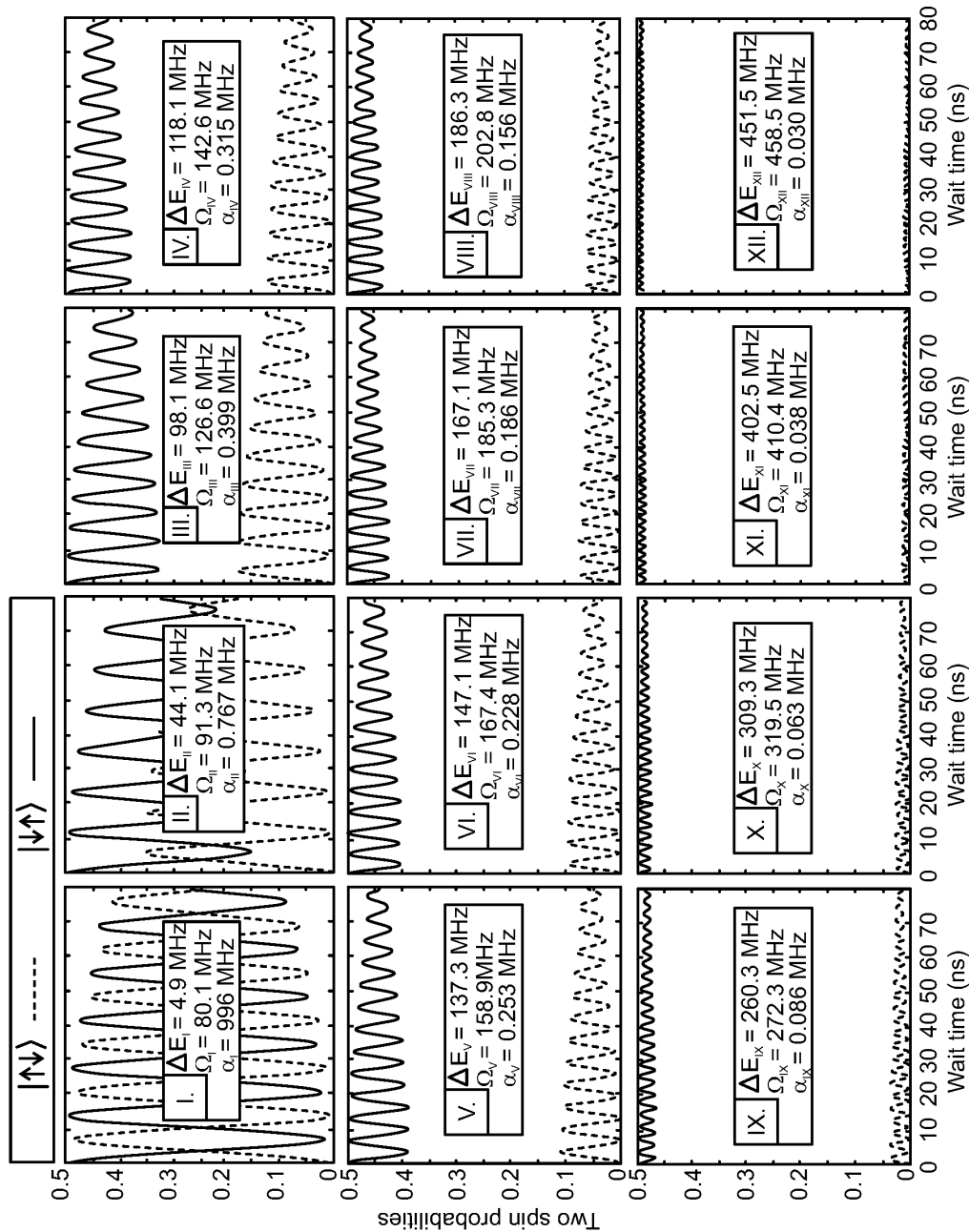


FIG. 11A

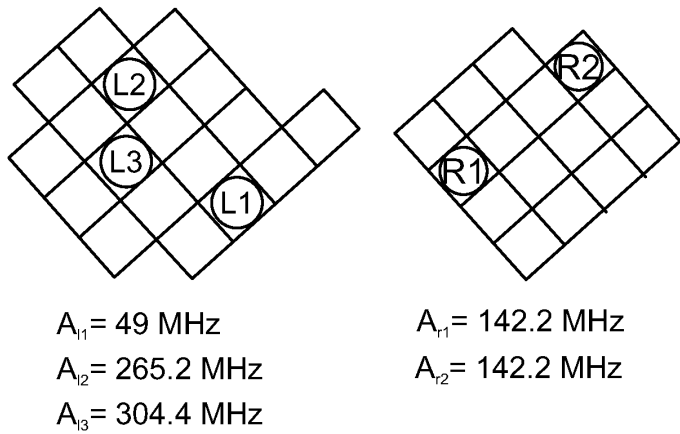


FIG. 11B

- I. $\downarrow\downarrow\uparrow\downarrow\uparrow / \uparrow\uparrow\downarrow\downarrow\uparrow / \downarrow\downarrow\uparrow\uparrow\downarrow / \uparrow\uparrow\downarrow\uparrow\downarrow$
- II. $\downarrow\uparrow\downarrow\downarrow\uparrow / \uparrow\downarrow\uparrow\downarrow\uparrow / \downarrow\uparrow\downarrow\uparrow\downarrow / \uparrow\downarrow\uparrow\uparrow\downarrow$
- III. $\downarrow\uparrow\downarrow\downarrow\downarrow / \uparrow\downarrow\uparrow\uparrow\uparrow$
- IV. $\uparrow\downarrow\downarrow\downarrow\downarrow / \downarrow\uparrow\uparrow\uparrow\uparrow$
- V. $\downarrow\downarrow\uparrow\downarrow\downarrow / \uparrow\uparrow\downarrow\uparrow\uparrow$
- VI. $\uparrow\uparrow\downarrow\downarrow\downarrow / \downarrow\downarrow\uparrow\uparrow\uparrow$
- VII. $\downarrow\downarrow\downarrow\downarrow\downarrow / \uparrow\uparrow\uparrow\uparrow\uparrow$
- VIII. $\uparrow\downarrow\uparrow\downarrow\downarrow / \downarrow\uparrow\downarrow\uparrow\uparrow$
- IX. $\downarrow\uparrow\uparrow\downarrow\uparrow / \uparrow\downarrow\downarrow\downarrow\uparrow / \downarrow\uparrow\uparrow\uparrow\downarrow / \uparrow\downarrow\downarrow\uparrow\downarrow$
- X. $\downarrow\downarrow\downarrow\downarrow\uparrow / \uparrow\uparrow\uparrow\downarrow\uparrow / \downarrow\downarrow\downarrow\uparrow\downarrow / \uparrow\uparrow\uparrow\uparrow\downarrow$
- XI. $\downarrow\uparrow\uparrow\downarrow\downarrow / \uparrow\downarrow\downarrow\uparrow\uparrow$
- XII. $\uparrow\uparrow\uparrow\downarrow\downarrow / \downarrow\downarrow\downarrow\uparrow\uparrow$

FIG. 11C

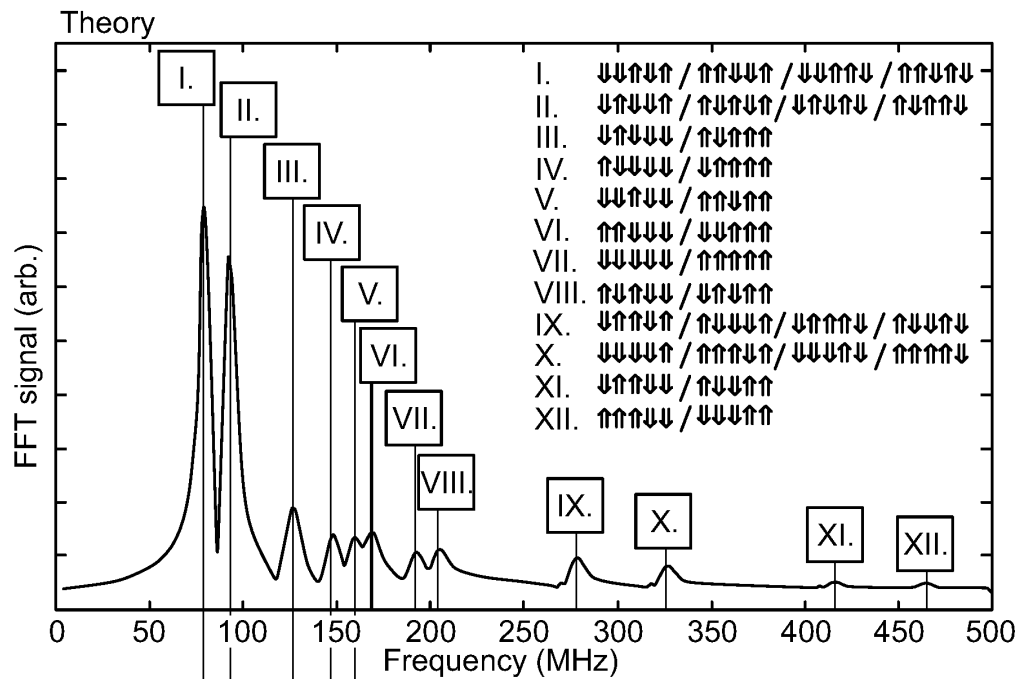


FIG. 11D

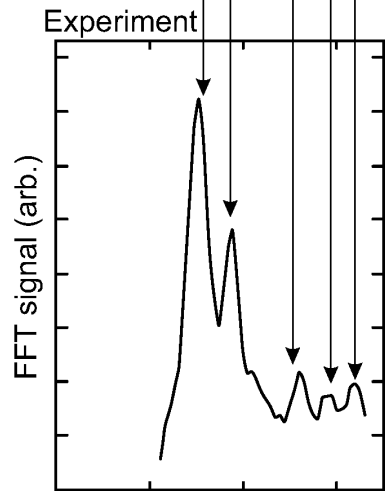


FIG. 11E

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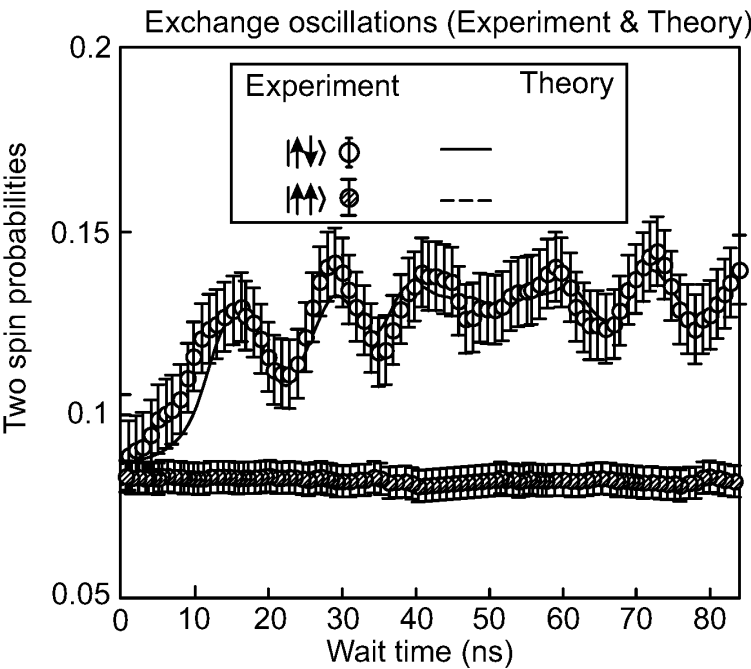


FIG. 11F

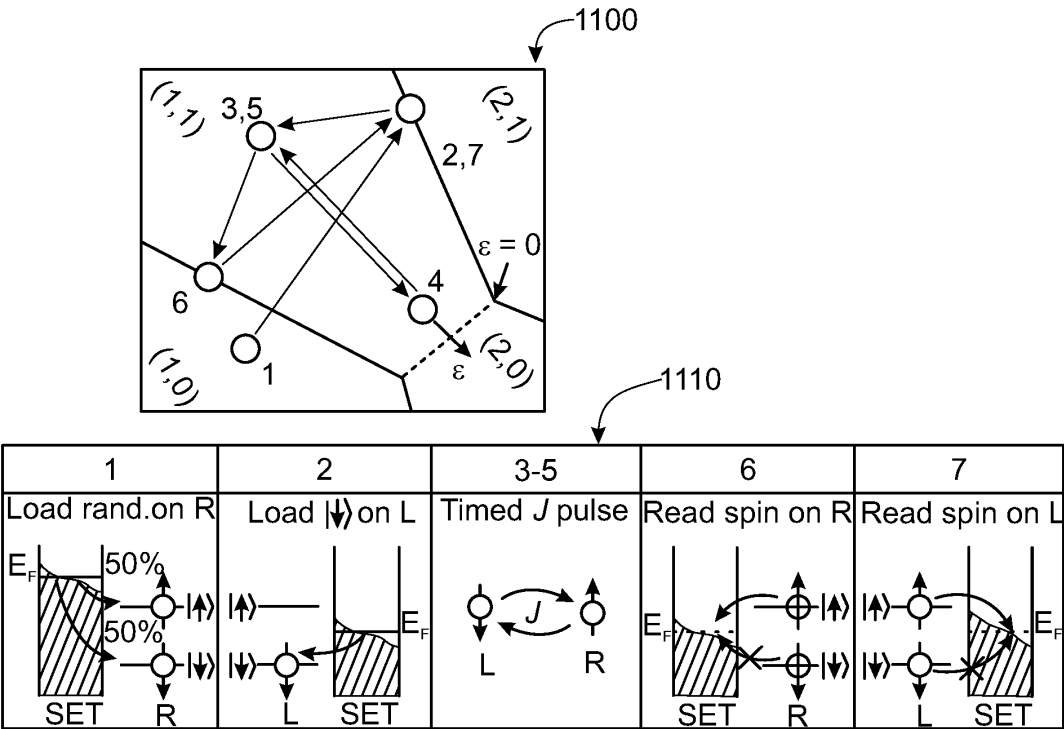


FIG. 11G

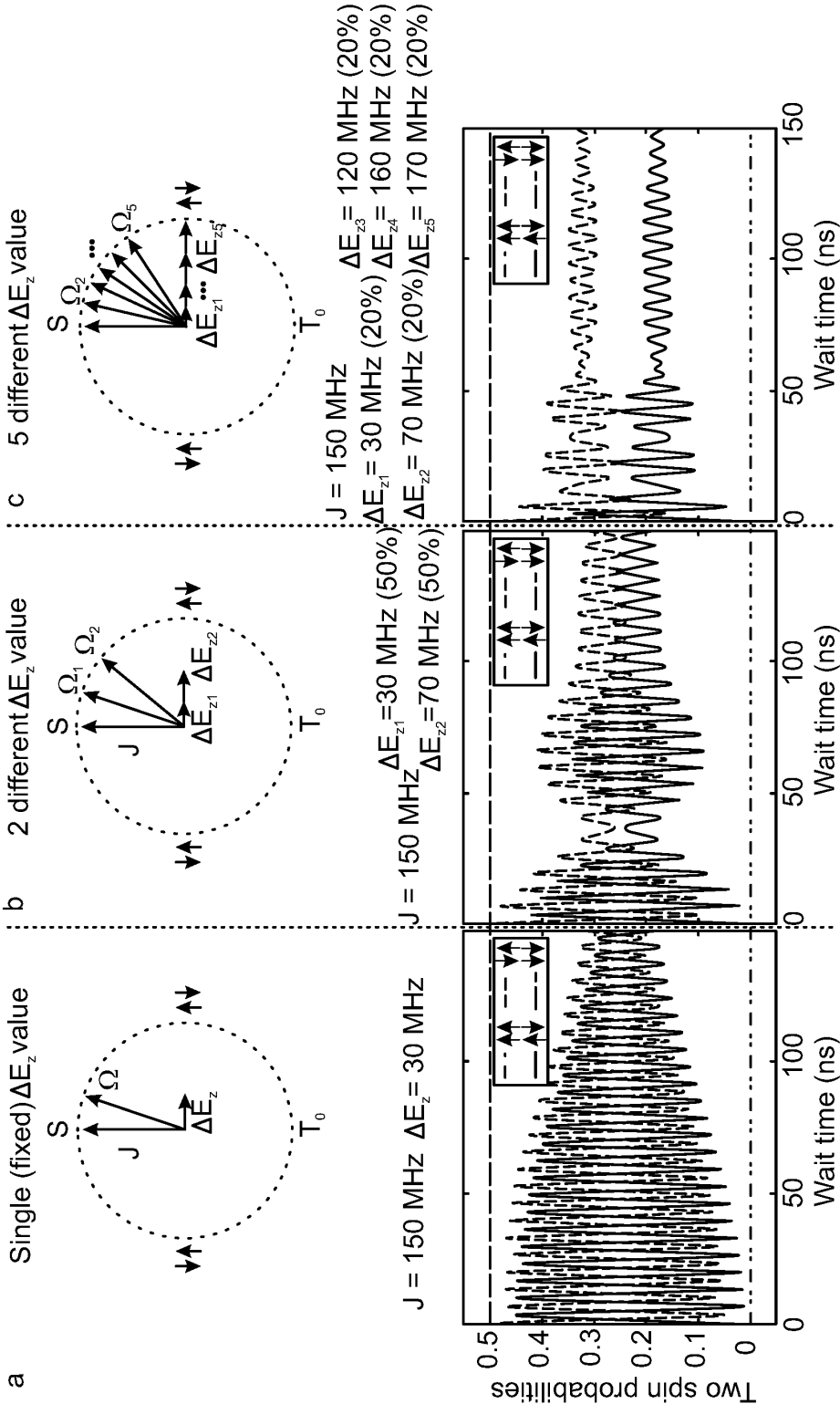
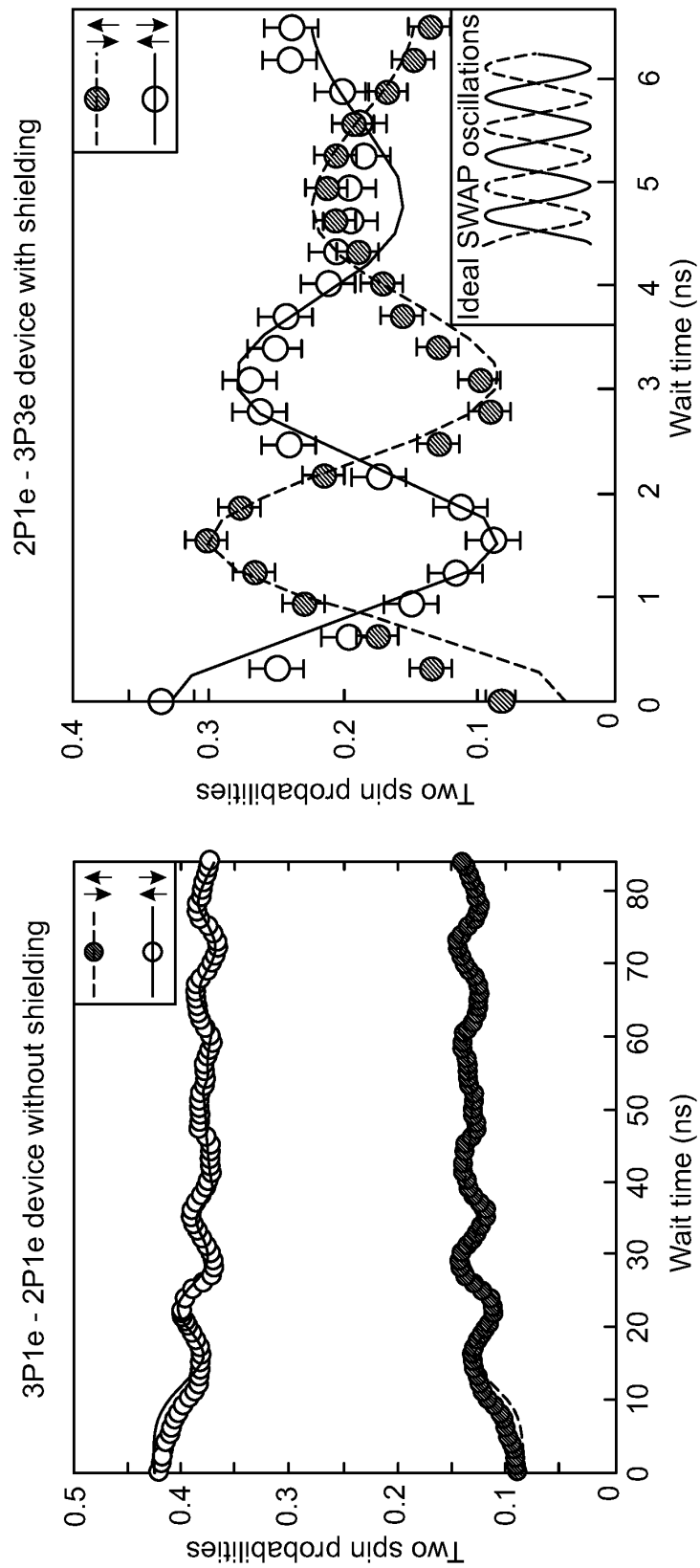
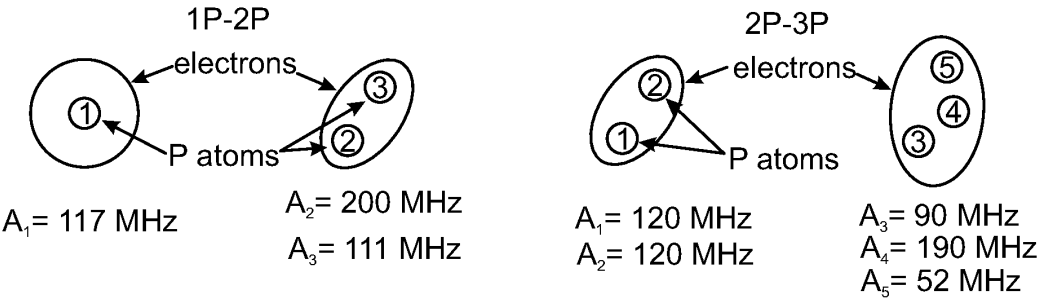


FIG. 12C

FIG. 12B

FIG. 12A





1	2	3	$\Delta E_z(\text{MHz})$
$\downarrow$	$\downarrow$	$\downarrow$	97
	$\downarrow$	$\uparrow$	14
	$\uparrow$	$\downarrow$	103
	$\uparrow$	$\uparrow$	214
$\uparrow$	$\downarrow$	$\downarrow$	214
	$\downarrow$	$\uparrow$	103
	$\uparrow$	$\downarrow$	14
	$\uparrow$	$\uparrow$	97

FIG. 14A

1	2	3	4	5	$\Delta E_z(\text{MHz})$
$\downarrow$	$\downarrow$	$\downarrow$	$\downarrow$	$\downarrow$	46
			$\uparrow$	$\uparrow$	6
		$\uparrow$	$\downarrow$	$\downarrow$	144
			$\uparrow$	$\uparrow$	196
	$\uparrow$	$\downarrow$	$\downarrow$	$\downarrow$	44
			$\uparrow$	$\uparrow$	96
		$\uparrow$	$\downarrow$	$\downarrow$	234
			$\uparrow$	$\uparrow$	286
		$\downarrow$	$\downarrow$	$\uparrow$	166
			$\uparrow$	$\downarrow$	114
		$\uparrow$	$\downarrow$	$\uparrow$	24
$\uparrow$	$\downarrow$	$\downarrow$	$\uparrow$	$\uparrow$	76
			$\downarrow$	$\downarrow$	76
		$\uparrow$	$\downarrow$	$\uparrow$	24
			$\uparrow$	$\downarrow$	114
	$\uparrow$	$\downarrow$	$\uparrow$	$\uparrow$	166
			$\downarrow$	$\downarrow$	166
		$\uparrow$	$\downarrow$	$\uparrow$	114
			$\uparrow$	$\downarrow$	24
		$\downarrow$	$\downarrow$	$\uparrow$	76
			$\uparrow$	$\downarrow$	76
		$\uparrow$	$\downarrow$	$\uparrow$	24
			$\uparrow$	$\downarrow$	114
	$\downarrow$	$\downarrow$	$\downarrow$	$\downarrow$	286
			$\uparrow$	$\uparrow$	234
		$\uparrow$	$\downarrow$	$\uparrow$	96
			$\uparrow$	$\downarrow$	44
	$\uparrow$	$\downarrow$	$\downarrow$	$\uparrow$	196
			$\uparrow$	$\downarrow$	144
	$\downarrow$	$\uparrow$	$\downarrow$	$\uparrow$	6
			$\uparrow$	$\downarrow$	46

FIG. 14B