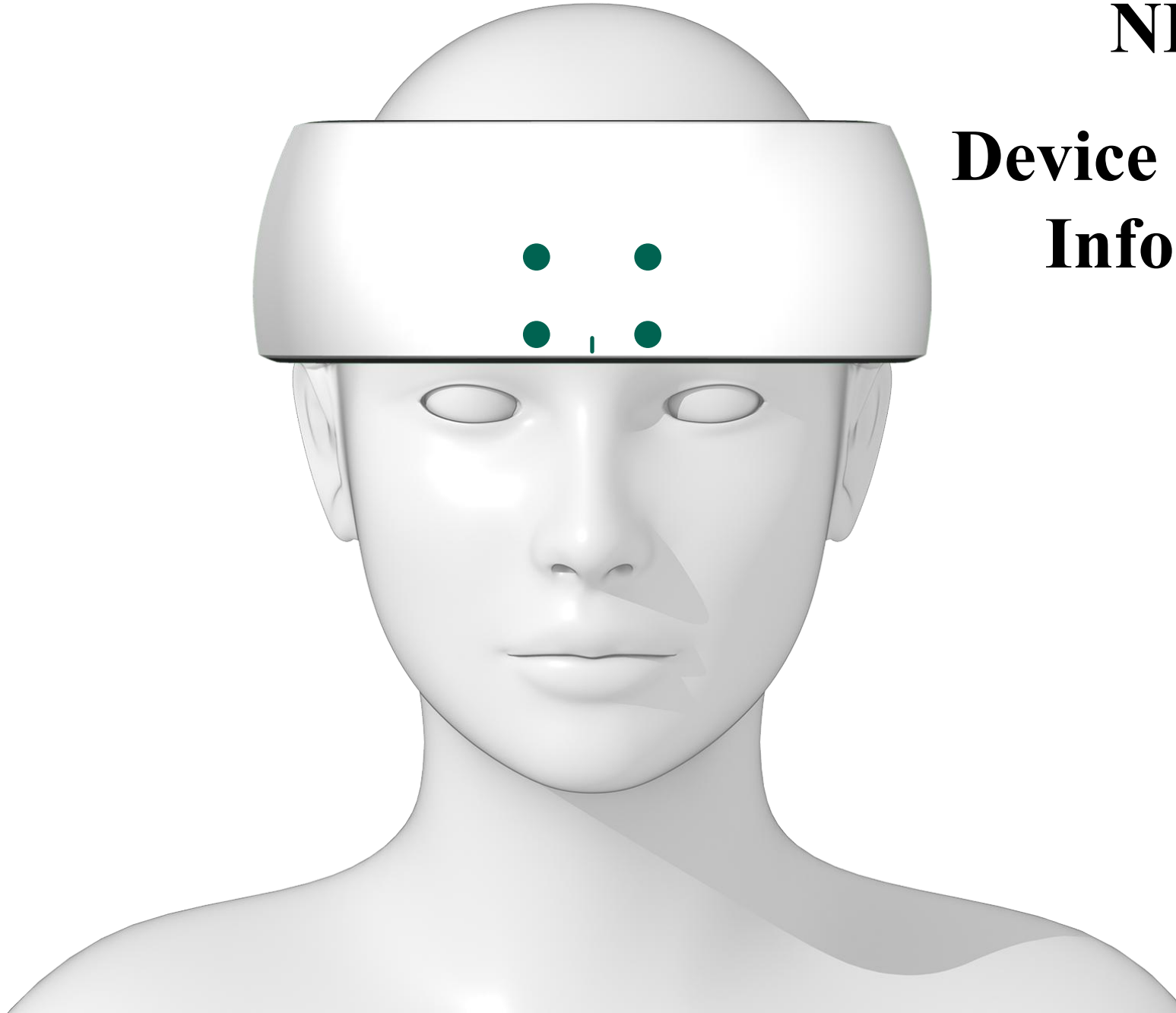


Device & Channel Information





NIRSIIT

Brain Imaging System

Portable High-resolution fNIRS device, NIRSIIT!

OBELAB introduces a new functional Near-Infrared Spectroscopy (fNIRS) system called NIRSIIT! This easy-to-use wearable system is specially designed to measure hemodynamic responses in the prefrontal cortex region.

Key Features

- Safe optical measurement with no radiation
- Easy wired and wireless connection
- Ergonomically designed to comfortably fit different head sizes
- Made of safe medical-grade silicon (no skin irritation)
- Real-time monitoring of Oxy and Deoxy hemoglobin concentration changes
- Provides the most channels among frontal lobe measurement fNIRS
- Supports multi-distance measurement of 204 channels (regular is 48 channels)
- Synchronization with Task Presentation software such as E-Prime, PsychoPy, and Psychtoolbox
- Supports SNIRF, CSV format for instant data export
- Easy-to-use proprietary analysis tool (also supports data export for open-source tools like Homer and NIRS-SPM)
- Simultaneous tracking of head motion using 6-axis motion sensor

Application Areas



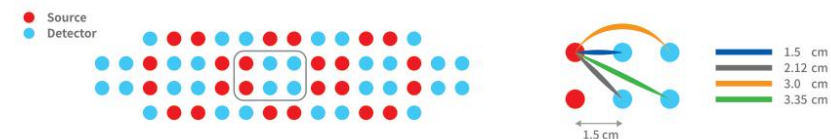
- Cognitive Function
- Psychiatric Disease
- Neuro-Marketing
- Neurological Disorder

NIRSIIT

Brain Imaging System



Channel Arrangement



Technical Specifications

Optode distance	Regular 3 cm (Multi distance 1.5cm, 2.12cm, 3.35cm)
Number of channels	48 channels (Max 204 channels)
Number of Optical Elements	Source : 24, Detector : 32
Wavelength	780nm, 850nm
Weight	550g
Sampling rate	8.138 Hz (about 8 samples / sec)
Motion sensor	6-axis (3 axis Accel + 3 axis Gyro)
Operating time	8 hours (3000mAh rechargeable battery)
Communication Protocol	Wireless : WLAN 2.4GHz IEEE 802.11b/g/n Wireline : Serial Communication
Recommended Tablet / PC spec.	≥ Android 11 ≥ Window 10, ≥ RAM 8GB, SSD
Warranty	1 Year



Accessories

NIRSIIT	Tablet	Strap	Silicon Cap	USB cable	USB memory (Manual, SW installer)
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www.obelab.com

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OBELAB

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For information on the device, please contact the OBELAB Customer Support Center.

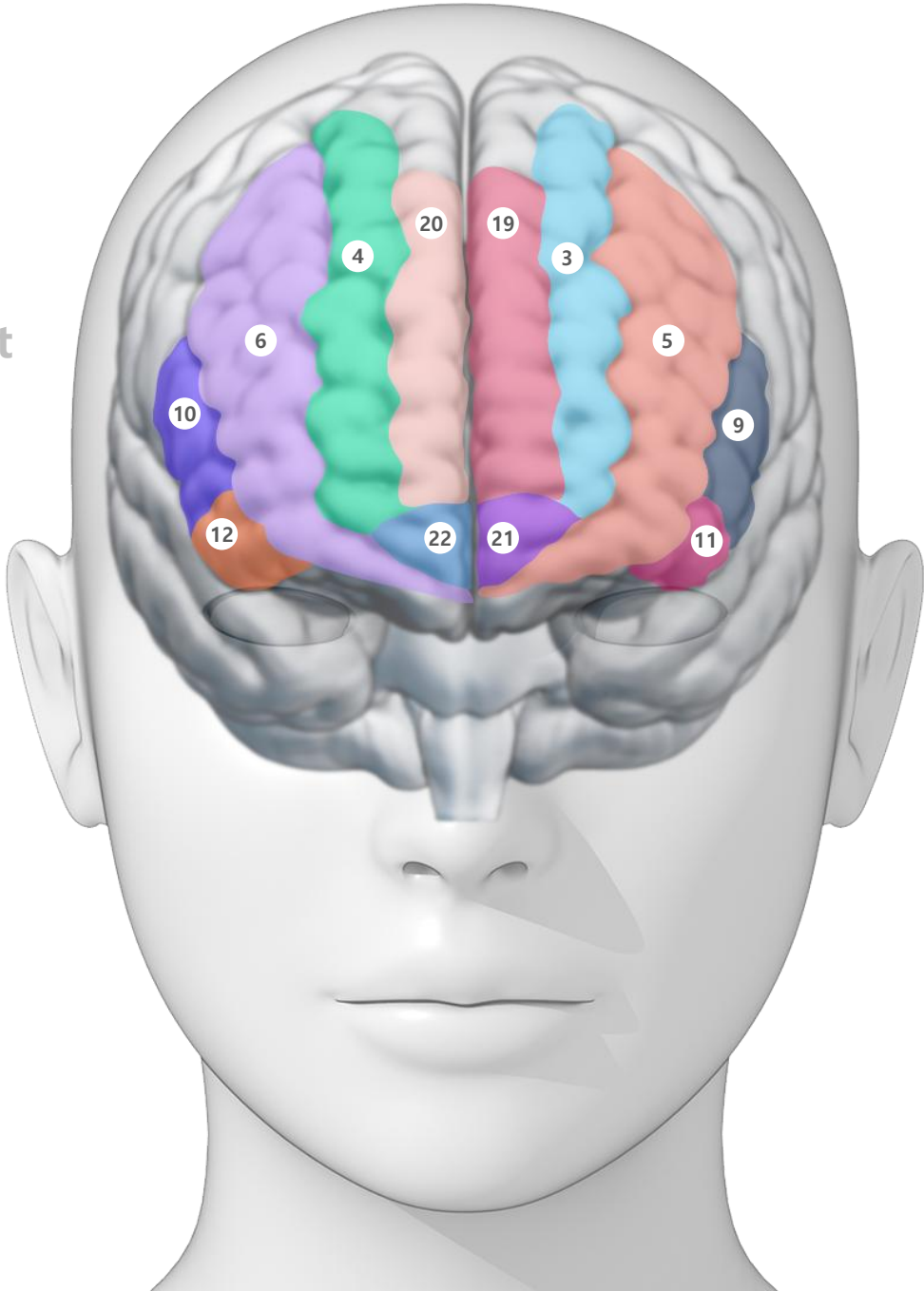
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AAL Label

on 3D Brian Templates

Right

Left



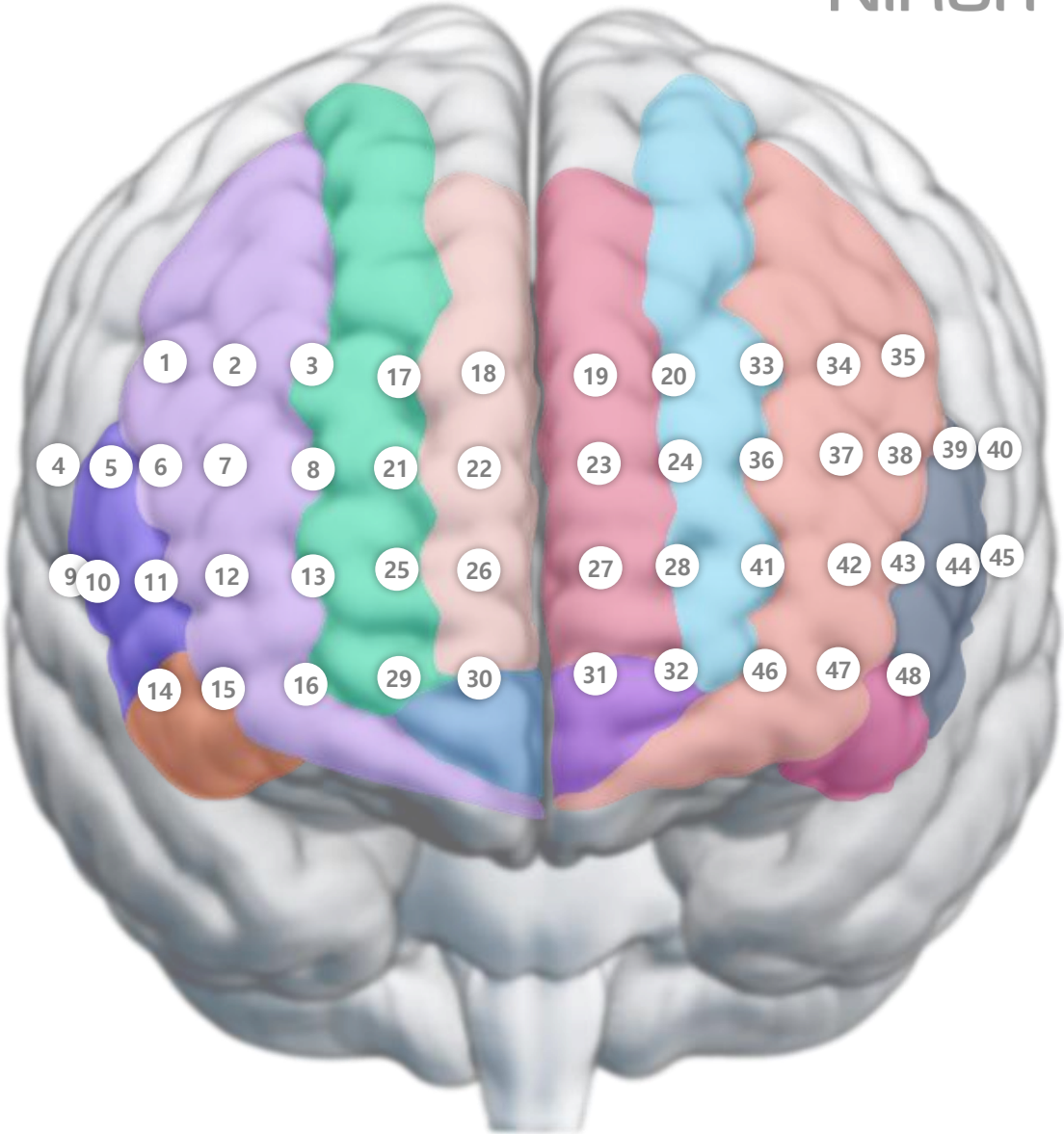
AAL index	Label	Location
3	Superior Frontal Gyrus, Dorsolateral	Left
4	Superior Frontal Gyrus, Dorsolateral	Right
5	Middle Frontal Gyrus	Left
6	Middle Frontal Gyrus	Right
9	Inferior Frontal Gyrus, Triangular Part	Left
10	Inferior Frontal Gyrus, Triangular Part	Right
11	Inferior Frontal Gyrus, Pars Orbitalis	Left
12	Inferior Frontal Gyrus, Pars Orbitalis	Right
19	Superior Frontal Gyrus, Medial	Left
20	Superior Frontal Gyrus, Medial	Right
21	Superior Frontal Gyrus, Medial Orbital	Left
22	Superior Frontal Gyrus, Medial Orbital	Right

AAL Label

on 3D Brian Templates

NIRSIT

Right



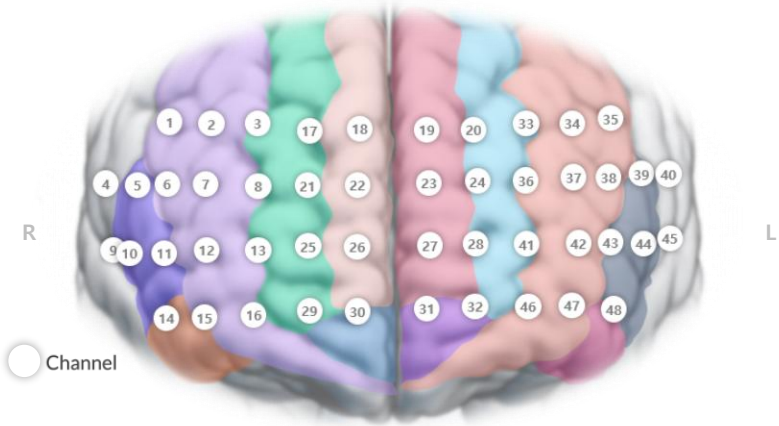
Left

AAL index	Label	Location
3	Superior Frontal Gyrus, Dorsolateral	Left
4	Superior Frontal Gyrus, Dorsolateral	Right
5	Middle Frontal Gyrus	Left
6	Middle Frontal Gyrus	Right
9	Inferior Frontal Gyrus, Triangular Part	Left
10	Inferior Frontal Gyrus, Triangular Part	Right
11	Inferior Frontal Gyrus, Pars Orbitalis	Left
12	Inferior Frontal Gyrus, Pars Orbitalis	Right
19	Superior Frontal Gyrus, Medial	Left
20	Superior Frontal Gyrus, Medial	Right
21	Superior Frontal Gyrus, Medial Orbital	Left
22	Superior Frontal Gyrus, Medial Orbital	Right

AAL Label

on 3D Brian Templates

AAL index	Label	Location	AAL index	Label	Location
3	Superior Frontal Gyrus, Dorsolateral	Left	11	Inferior Frontal Gyrus, Pars Orbitalis	Left
4	Superior Frontal Gyrus, Dorsolateral	Right	12	Inferior Frontal Gyrus, Pars Orbitalis	Right
5	Middle Frontal Gyrus	Left	19	Superior Frontal Gyrus, Medial	Left
6	Middle Frontal Gyrus	Right	20	Superior Frontal Gyrus, Medial	Right
9	Inferior Frontal Gyrus, Triangular Part	Left	21	Superior Frontal Gyrus, Medial Orbital	Left
10	Inferior Frontal Gyrus, Triangular Part	Right	22	Superior Frontal Gyrus, Medial Orbital	Right

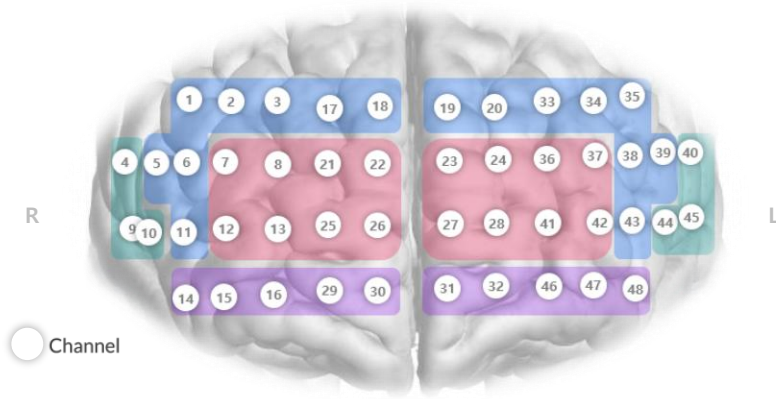


Estimated NIRSIT MNI Coordinates & AAL Label

Channels	X	Y	Z	Location	AAL Index (AAL 3V1)	AAL Label
CH 1	48.3	38.3	33.3	Right	6	Middle Frontal Gyrus
CH 2	40.3	48.3	32.3	Right	6	Middle Frontal Gyrus
CH 3	31.7	55.7	31.7	Right	6	Middle Frontal Gyrus
CH 4	61.0	22.7	21.3	Right	10	IFG, Triangular Part
CH 5	57.6	34.3	20.7	Right	10	IFG, Triangular Part
CH 6	49.7	46.3	20.7	Right	6	Middle Frontal Gyrus
CH 7	42.3	56.3	20.3	Right	6	Middle Frontal Gyrus
CH 8	33.7	63.0	19.0	Right	4	SFG, Dorsolateral
CH 9	60.0	27.7	7.3	Right	10	IFG, Triangular Part
CH 10	57.0	38.3	6.3	Right	10	IFG, Triangular Part
CH 11	50.0	51.0	6.0	Right	6	Middle Frontal Gyrus
CH 12	43.7	60.0	6.0	Right	6	Middle Frontal Gyrus
CH 13	33.3	67.0	5.7	Right	4	SFG, Dorsolateral
CH 14	50.0	51.3	-8.3	Right	12 6	IFG, Pars Orbitalis MFG
CH 15	42.7	60.7	-7.7	Right	6	Middle Frontal Gyrus
CH 16	33.7	67.0	-7.7	Right	4	SFG, Dorsolateral

Channels	X	Y	Z	Location	AAL Index (AAL 3V1)	AAL Label
CH 17	21.0	62.0	31.7	Right	4	SFG, Dorsolateral
CH 18	11.0	65.0	32.0	Right	20	SFG, Medial
CH 19	-2.3	63.0	31.7	Left	19	SFG, Medial
CH 20	-14.3	62.7	32.7	Left	3	SFG, Dorsolateral
CH 21	22.0	69.7	19.0	Right	4	SFG, Dorsolateral
CH 22	11.7	71.0	19.3	Right	20	SFG, Medial
CH 23	-2.7	68.7	17.7	Left	19	SFG, Medial
CH 24	-15.0	70.0	19.0	Left	3	SFG, Dorsolateral
CH 25	22.3	72.0	5.7	Right	4	SFG, Dorsolateral
CH 26	11.7	74.0	5.7	Right	20	SFG, Medial
CH 27	-3.7	71.0	5.3	Left	19	SFG, Medial
CH 28	-15.3	73.0	5.3	Left	3	SFG, Dorsolateral
CH 29	21.7	71.0	-6.7	Right	4	SFG, Dorsolateral
CH 30	11.3	73.0	-7.7	Right	22	SFG, Medial Orbital
CH 31	-2.3	70.0	-7.7	Left	21	SFG, Medial Orbital
CH 32	-14.7	71.0	-8.7	Left	3	SFG, Dorsolateral

Channels	X	Y	Z	Location	AAL Index (AAL 3V1)	AAL Label
CH 33	-26.0	56.7	32.0	Left	3	SFG, Dorsolateral
CH 34	-37.7	48.7	32.3	Left	5	Middle Frontal Gyrus
CH 35	-46.7	37.7	32.3	Left	5	Middle Frontal Gyrus
CH 36	-26.7	65.0	19.7	Left	3	SFG, Dorsolateral
CH 37	-38.3	57.7	19.7	Left	5	Middle Frontal Gyrus
CH 38	-47.7	45.3	19.7	Left	5	Middle Frontal Gyrus
CH 39	-55.3	31.7	18.3	Left	9	IFG, Triangular Part
CH 40	-60.0	19.3	19.3	Left	9	IFG, Triangular Part
CH 41	-26.7	68.0	4.3	Left	3	SFG, Dorsolateral
CH 42	-39.0	61.7	4.3	Left	5	Middle Frontal Gyrus
CH 43	-48.3	49.7	4.3	Left	5	Middle Frontal Gyrus
CH 44	-55.0	36.7	3.7	Left	9	IFG, Triangular Part
CH 45	-58.0	23.7	5.3	Left	9	IFG, Triangular Part
CH 46	-26.7	67.0	-9.7	Left	3	SFG, Dorsolateral
CH 47	-38.3	60.7	-10.3	Left	5	Middle Frontal Gyrus
CH 48	-47.7	49.3	-10.7	Left	11 5	IFG, Pars Orbitalis MFG



Estimated NIRSIT MNI Coordinates & Brodmann Label

Channels	X	Y	Z	Location	BA Label
CH 1	48.3	38.3	33.3	Right	Dorsolateral Prefrontal Cortex
CH 2	40.3	48.3	32.3	Right	Dorsolateral Prefrontal Cortex
CH 3	31.7	55.7	31.7	Right	Dorsolateral Prefrontal Cortex
CH 4	61.0	22.7	21.3	Right	Ventrolateral Prefrontal Cortex
CH 5	57.6	34.3	20.7	Right	Dorsolateral Prefrontal Cortex
CH 6	49.7	46.3	20.7	Right	Dorsolateral Prefrontal Cortex
CH 7	42.3	56.3	20.3	Right	Frontopolar Prefrontal Cortex
CH 8	33.7	63.0	19.0	Right	Frontopolar Prefrontal Cortex
CH 9	60.0	27.7	7.3	Right	Ventrolateral Prefrontal Cortex
CH 10	57.0	38.3	6.3	Right	Ventrolateral Prefrontal Cortex
CH 11	50.0	51.0	6.0	Right	Dorsolateral Prefrontal Cortex
CH 12	43.7	60.0	6.0	Right	Frontopolar Prefrontal Cortex
CH 13	33.3	67.0	5.7	Right	Frontopolar Prefrontal Cortex
CH 14	50.0	51.3	-8.3	Right	Orbitofrontal Cortex
CH 15	42.7	60.7	-7.7	Right	Orbitofrontal Cortex
CH 16	33.7	67.0	-7.7	Right	Orbitofrontal Cortex

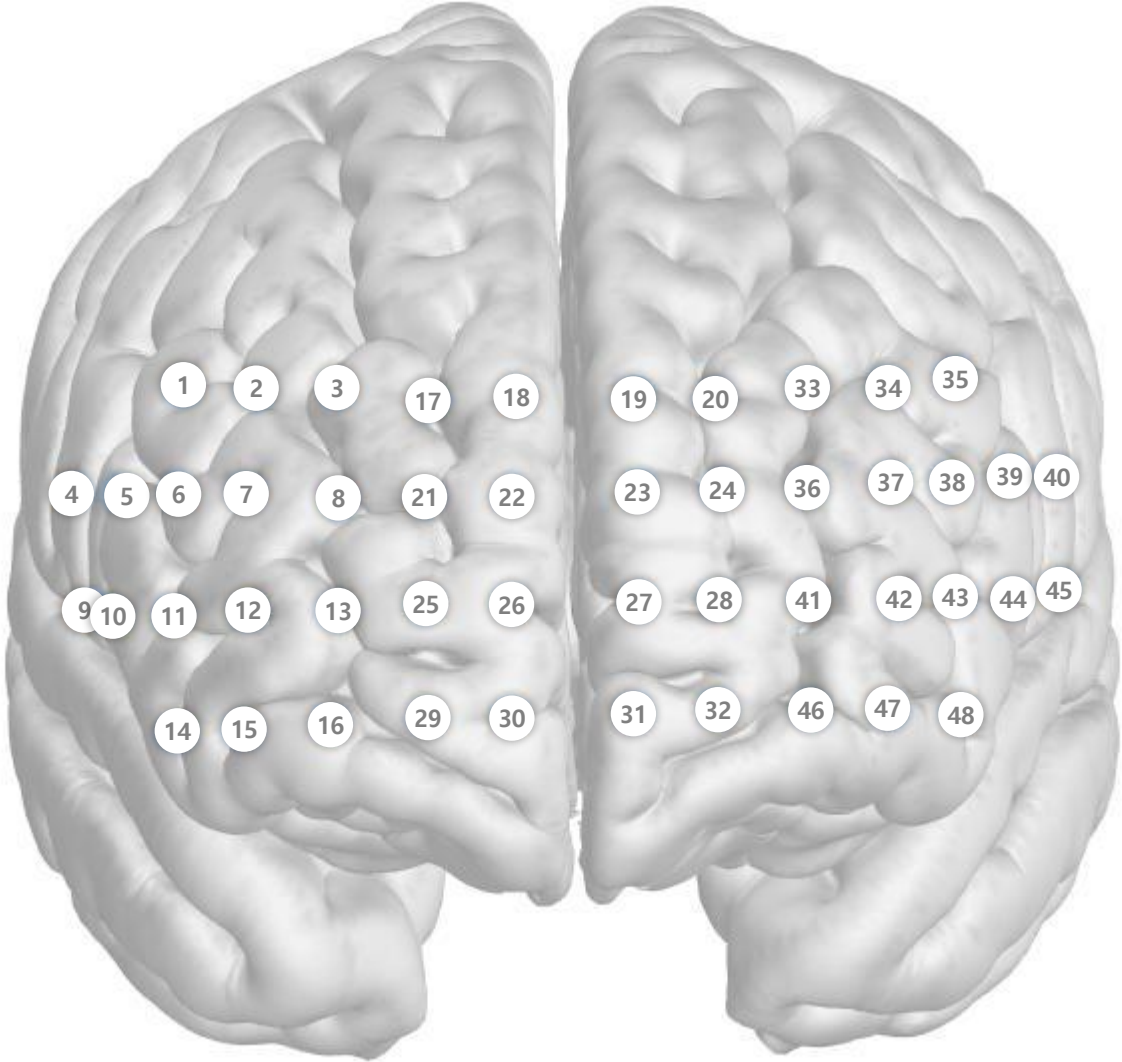
Channels	X	Y	Z	Location	BA Label
CH 17	21.0	62.0	31.7	Right	Dorsolateral Prefrontal Cortex
CH 18	11.0	65.0	32.0	Right	Dorsolateral Prefrontal Cortex
CH 19	-2.3	63.0	31.7	Left	Dorsolateral Prefrontal Cortex
CH 20	-14.3	62.7	32.7	Left	Dorsolateral Prefrontal Cortex
CH 21	22.0	69.7	19.0	Right	Frontopolar Prefrontal Cortex
CH 22	11.7	71.0	19.3	Right	Frontopolar Prefrontal Cortex
CH 23	-2.7	68.7	17.7	Left	Frontopolar Prefrontal Cortex
CH 24	-15.0	70.0	19.0	Left	Frontopolar Prefrontal Cortex
CH 25	22.3	72.0	5.7	Right	Frontopolar Prefrontal Cortex
CH 26	11.7	74.0	5.7	Right	Frontopolar Prefrontal Cortex
CH 27	-3.7	71.0	5.3	Left	Frontopolar Prefrontal Cortex
CH 28	-15.3	73.0	5.3	Left	Frontopolar Prefrontal Cortex
CH 29	21.7	71.0	-6.7	Right	Orbitofrontal Cortex
CH 30	11.3	73.0	-7.7	Right	Orbitofrontal Cortex
CH 31	-2.3	70.0	-7.7	Left	Orbitofrontal Cortex
CH 32	-14.7	71.0	-8.7	Left	Orbitofrontal Cortex

Channels	X	Y	Z	Location	BA Label
CH 33	-26.0	56.7	32.0	Left	Dorsolateral Prefrontal Cortex
CH 34	-37.7	48.7	32.3	Left	Dorsolateral Prefrontal Cortex
CH 35	-46.7	37.7	32.3	Left	Dorsolateral Prefrontal Cortex
CH 36	-26.7	65.0	19.7	Left	Frontopolar Prefrontal Cortex
CH 37	-38.3	57.7	19.7	Left	Frontopolar Prefrontal Cortex
CH 38	-47.7	45.3	19.7	Left	Dorsolateral Prefrontal Cortex
CH 39	-55.3	31.7	18.3	Left	Dorsolateral Prefrontal Cortex
CH 40	-60.0	19.3	19.3	Left	Ventrolateral Prefrontal Cortex
CH 41	-26.7	68.0	4.3	Left	Frontopolar Prefrontal Cortex
CH 42	-39.0	61.7	4.3	Left	Frontopolar Prefrontal Cortex
CH 43	-48.3	49.7	4.3	Left	Dorsolateral Prefrontal Cortex
CH 44	-55.0	36.7	3.7	Left	Ventrolateral Prefrontal Cortex
CH 45	-58.0	23.7	5.3	Left	Ventrolateral Prefrontal Cortex
CH 46	-26.7	67.0	-9.7	Left	Orbitofrontal Cortex
CH 47	-38.3	60.7	-10.3	Left	Orbitofrontal Cortex
CH 48	-47.7	49.3	-10.7	Left	Orbitofrontal Cortex

NIRSIT Channels

Right

Left



NIRSIT

Brodmann Mapping of NIRSIT Channels

Right

Left

NIRSIT

Dorsolateral Prefrontal Cortex (Right)

Ventrolateral Prefrontal Cortex (Right)

Orbitofrontal Cortex (Right)

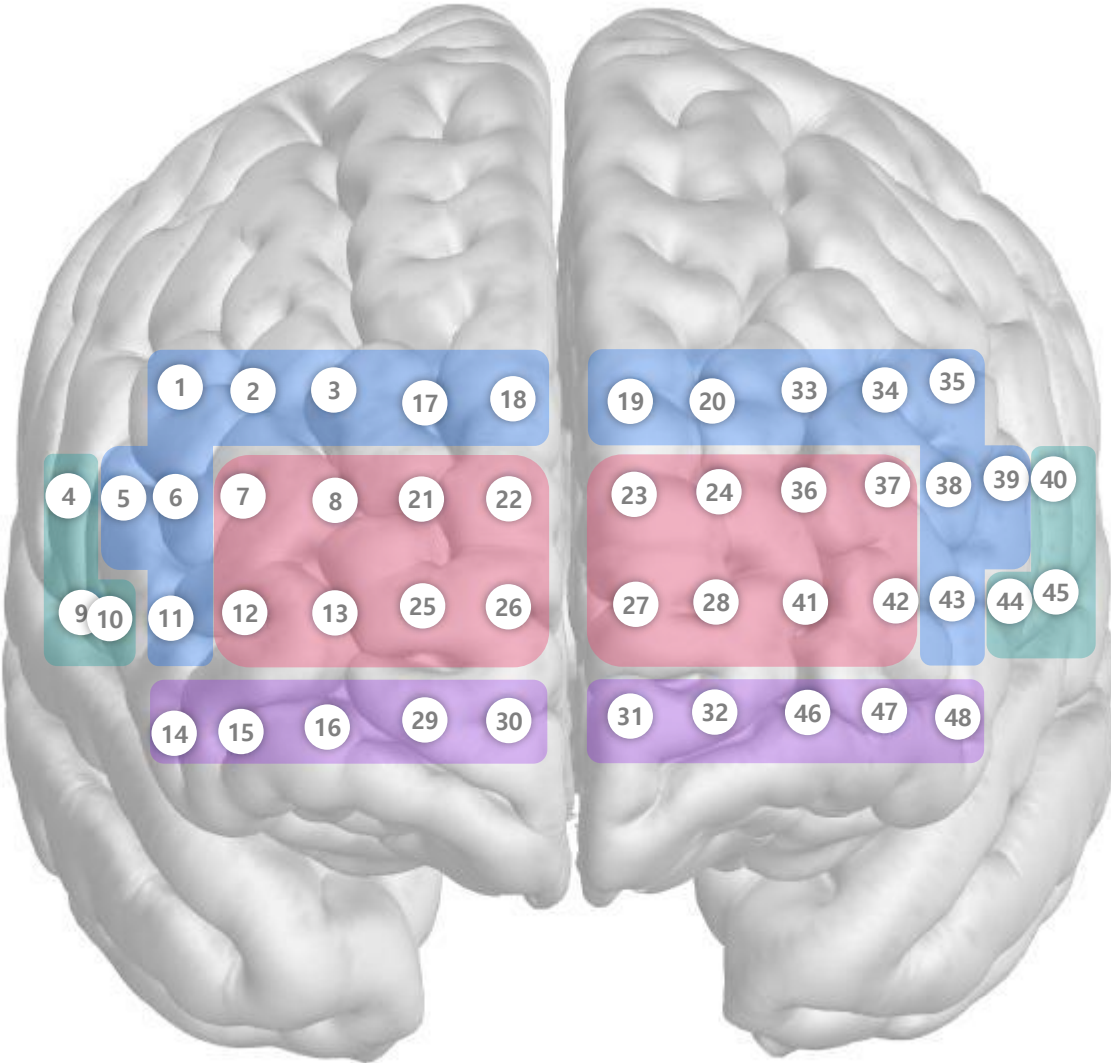
Frontopolar Prefrontal Cortex (Right)

Dorsolateral Prefrontal Cortex (Left)

Ventrolateral Prefrontal Cortex (Left)

Orbitofrontal Cortex (Left)

Frontopolar Prefrontal Cortex (Left)



Brodmann Mapping of NIRSIT Channels

Right

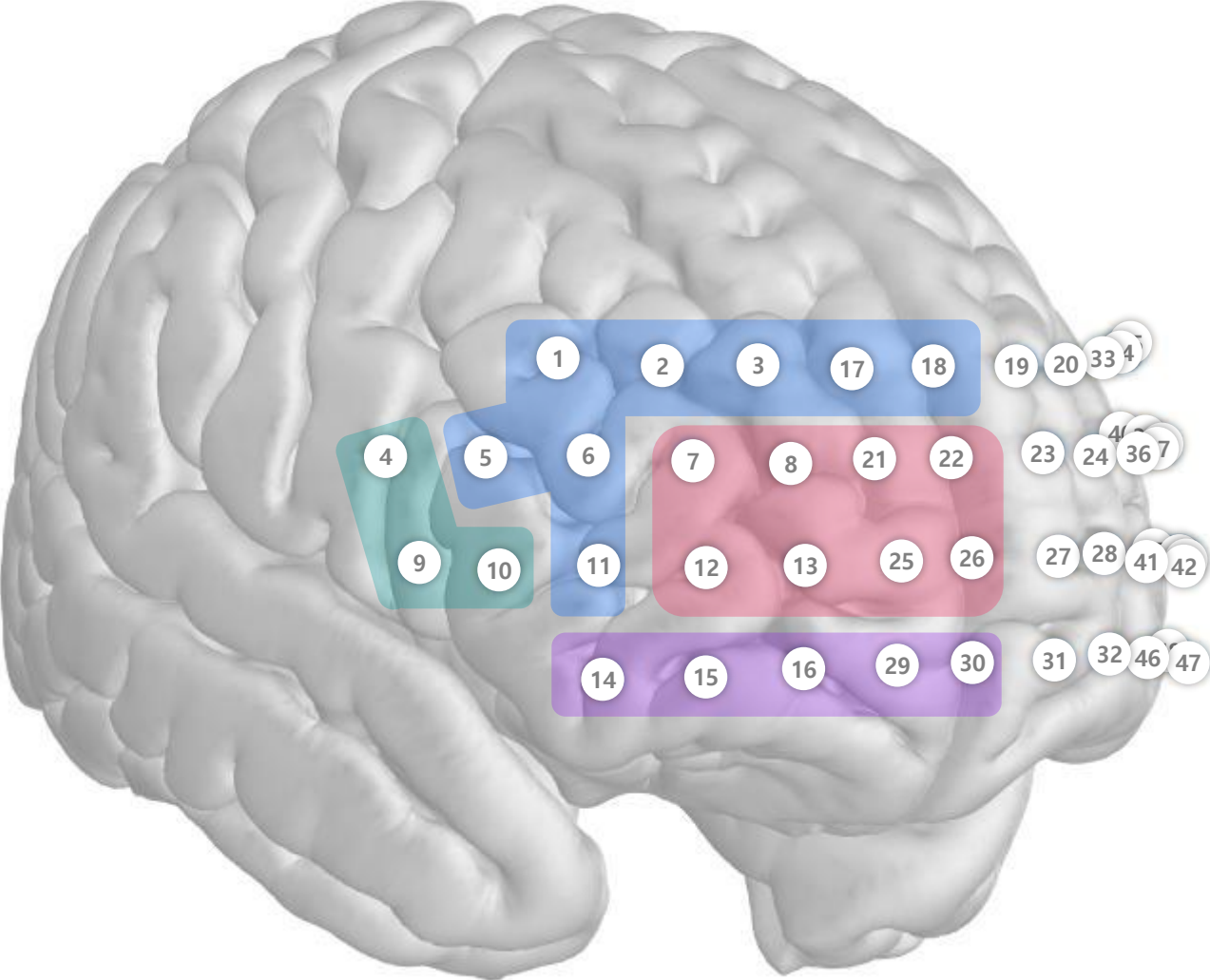
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Dorsolateral Prefrontal Cortex (Right)

Ventrolateral Prefrontal Cortex (Right)

Orbitofrontal Cortex (Right)

Frontopolar Prefrontal Cortex (Right)

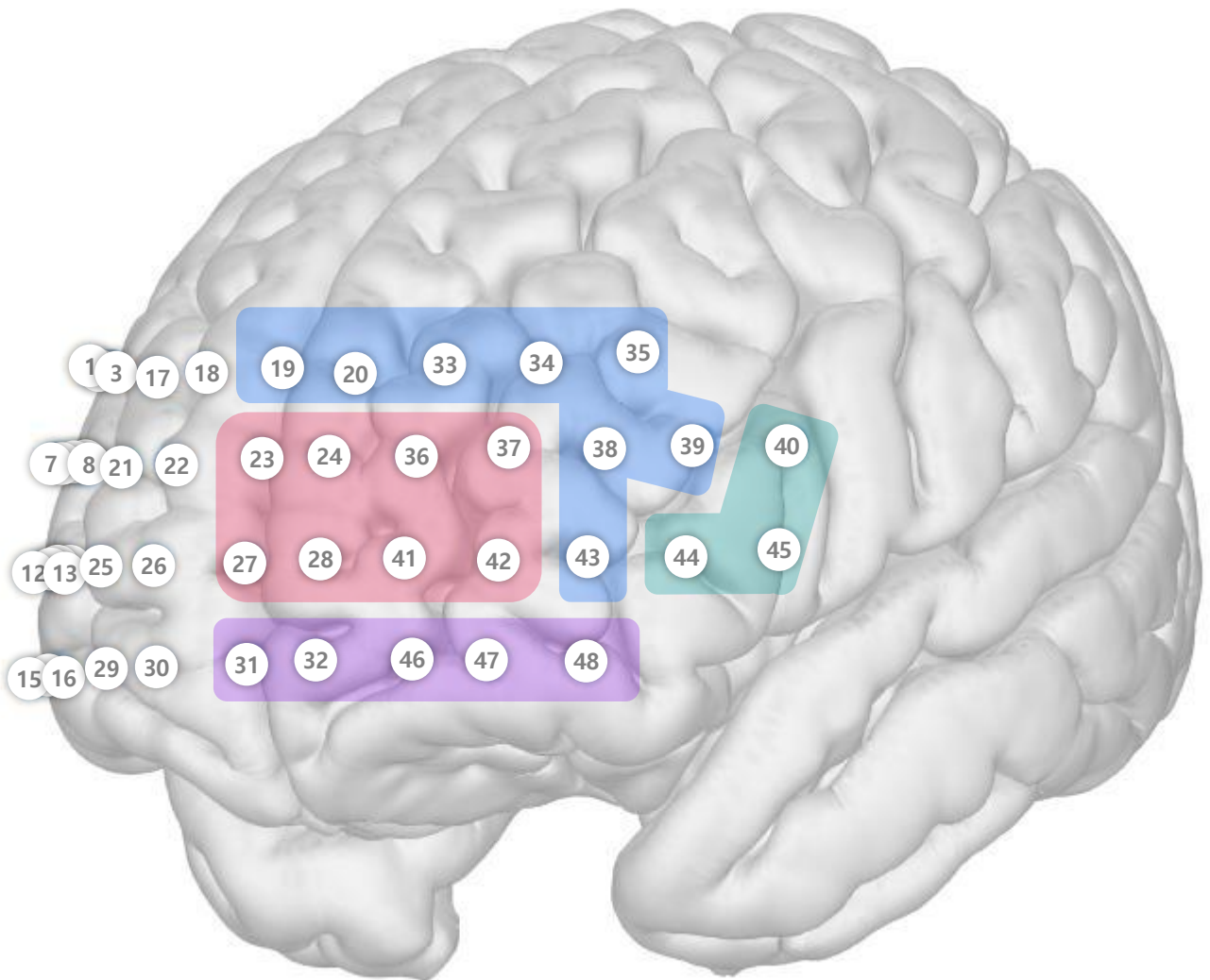


NIRSIT

Brodmann Mapping of NIRSIT Channels

Right

Left



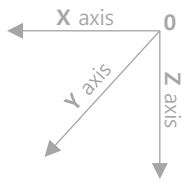
NIRSIT

Dorsolateral Prefrontal Cortex (Left)

Ventrolateral Prefrontal Cortex (Left)

Orbitofrontal Cortex (Left)

Frontopolar Prefrontal Cortex (Left)

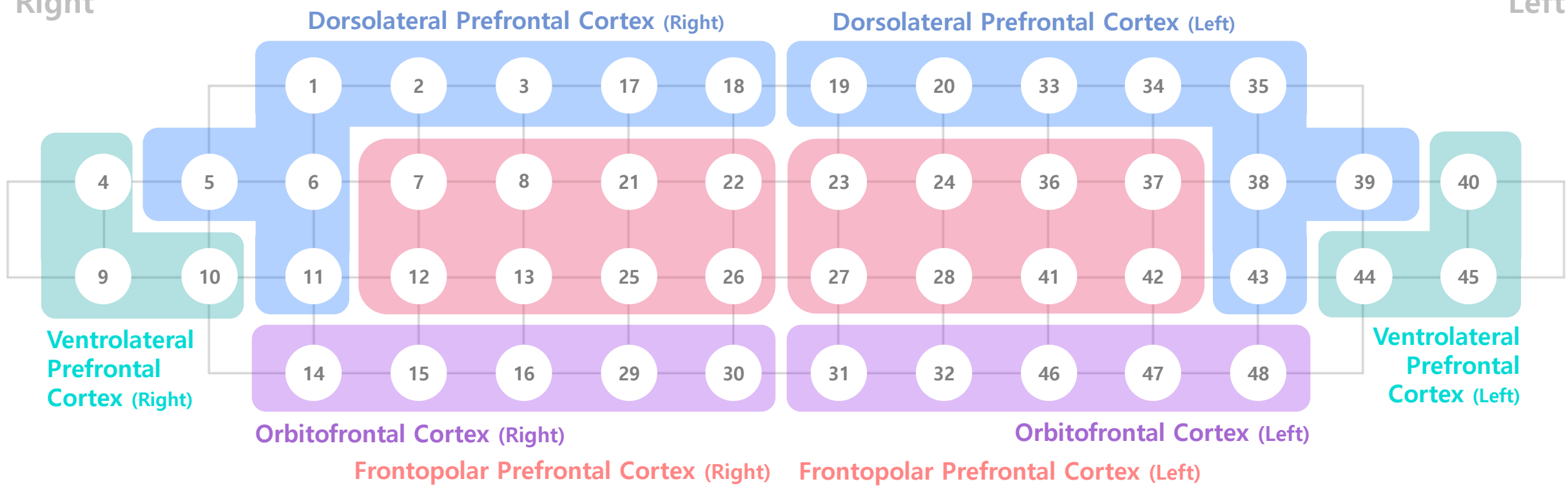


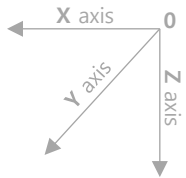
Brodmann Mapping of NIRSIT Channels

NIRSIT

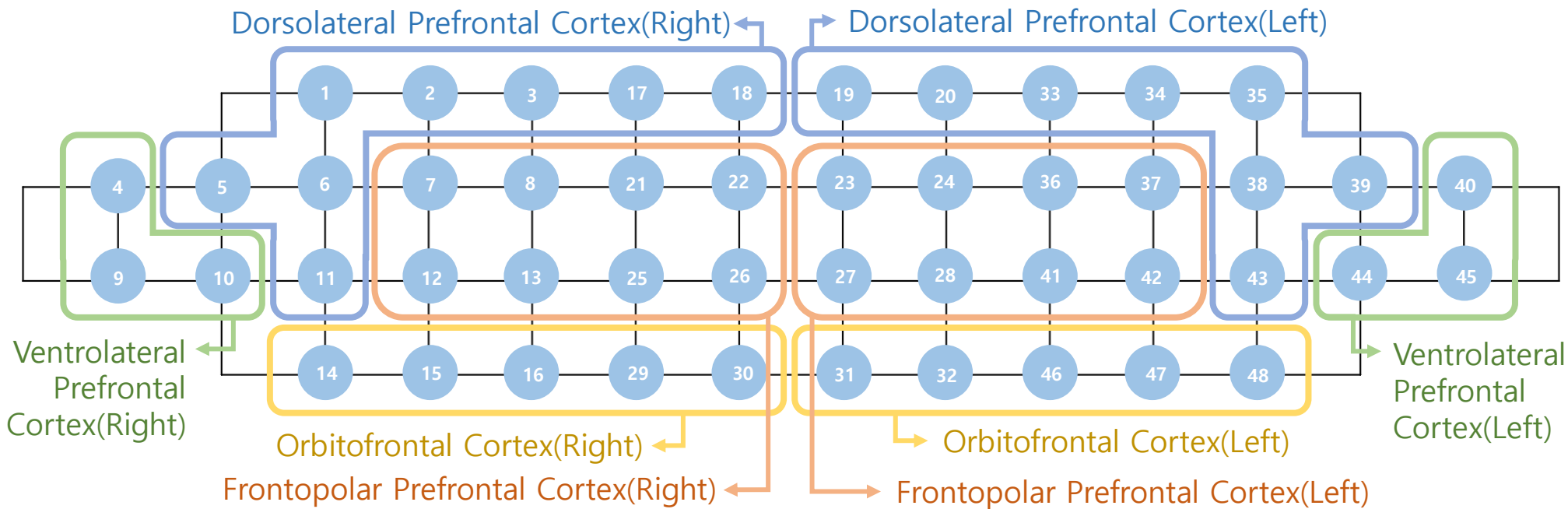
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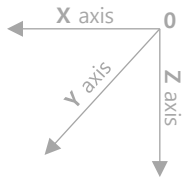
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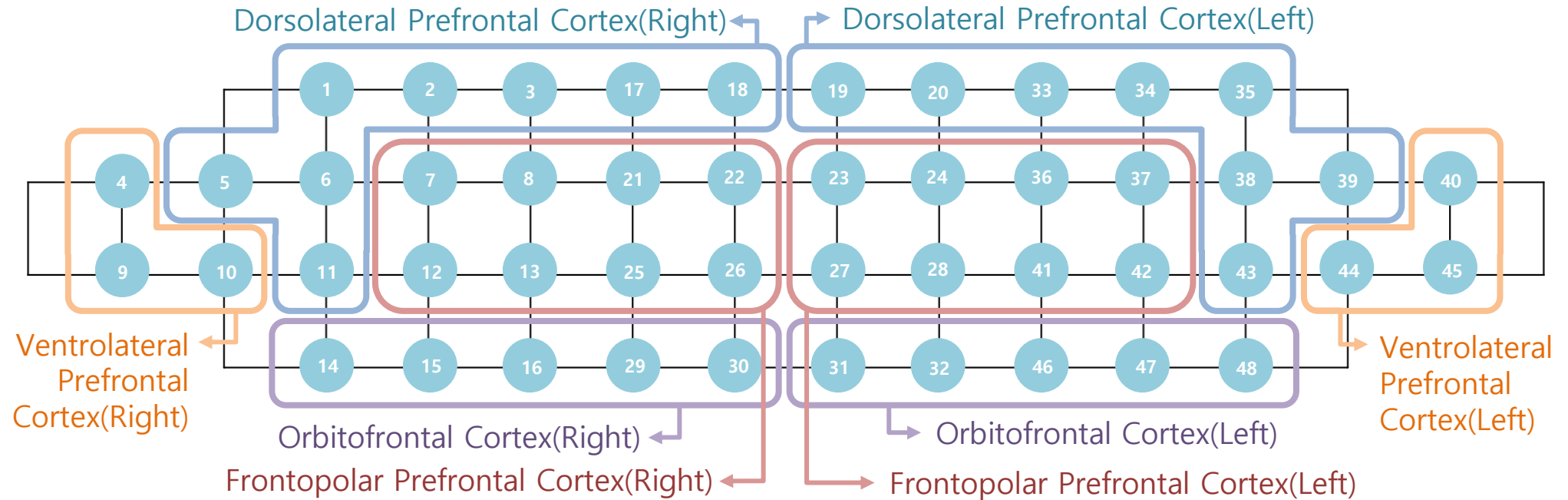


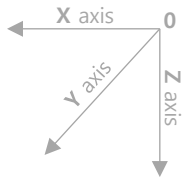
Brodmann Mapping of NIRSIT Channels





Brodmann Mapping of NIRSIT Channels



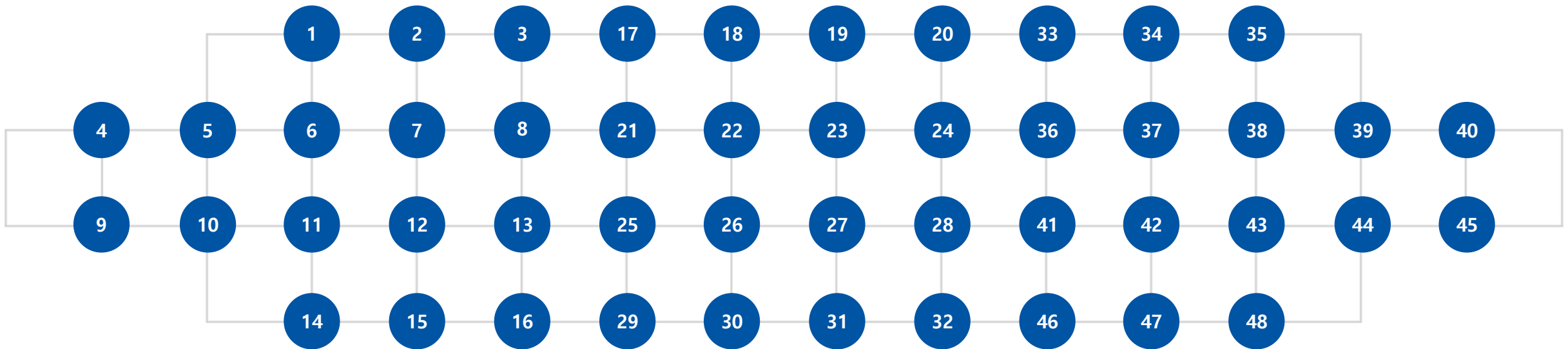


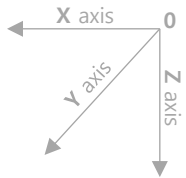
NIRSIT Channels

NIRSIT

Right

Left



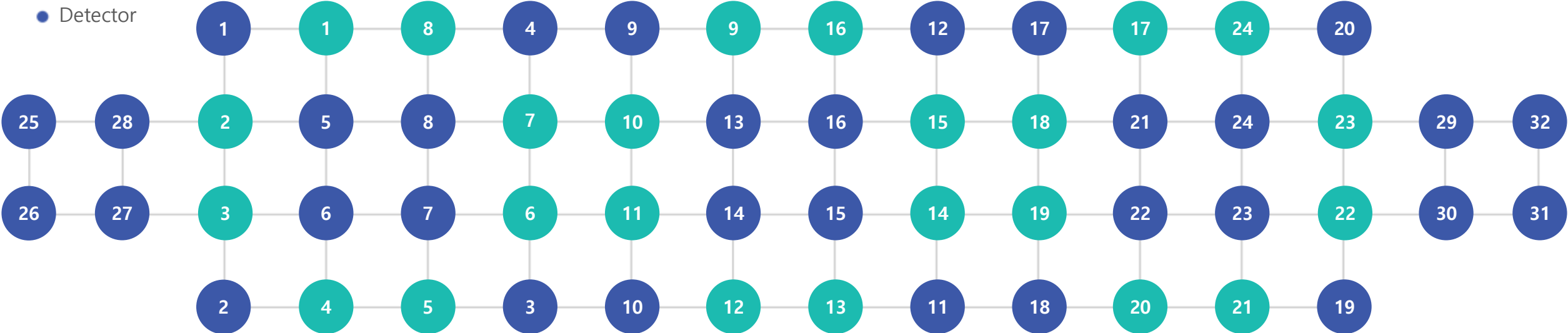


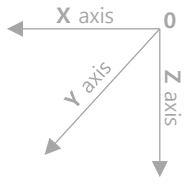
Laser-Detector Mapping of NIRSIT Channels

Right

Left

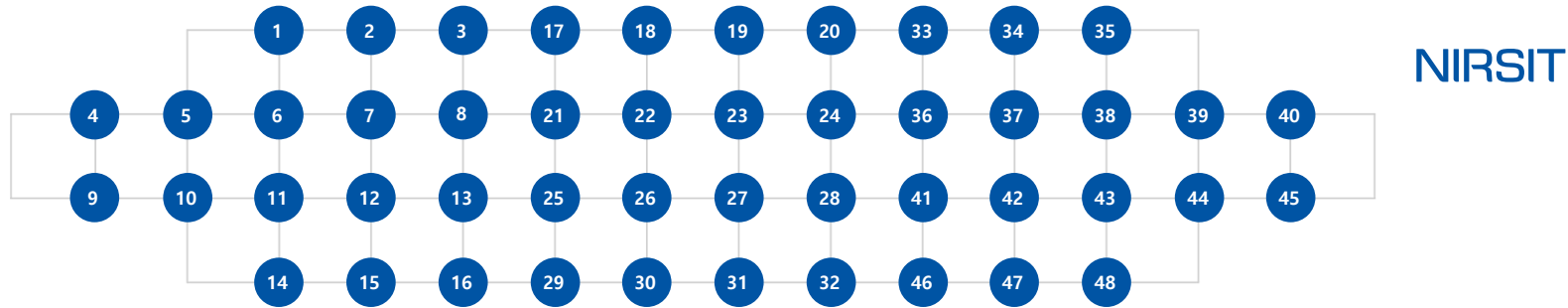
- Laser
- Detector





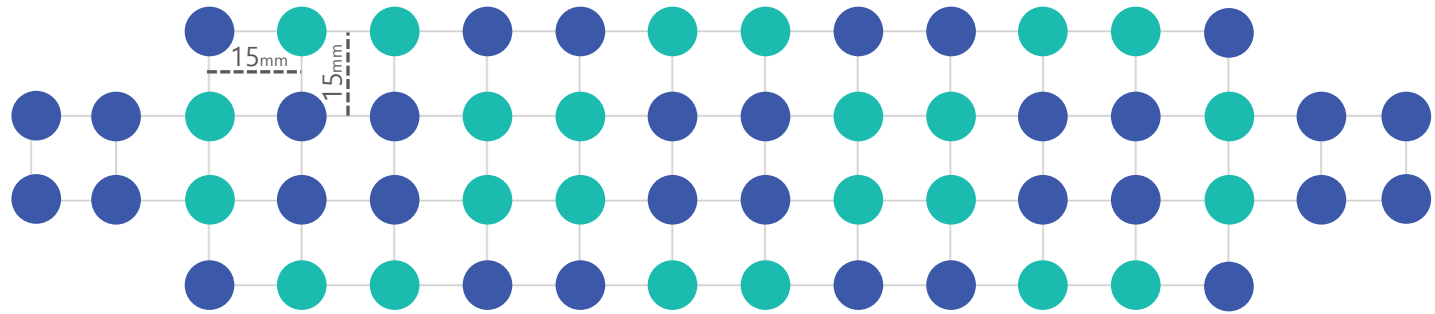
Laser-Detector Mapping of NIRSIT Channels

Right

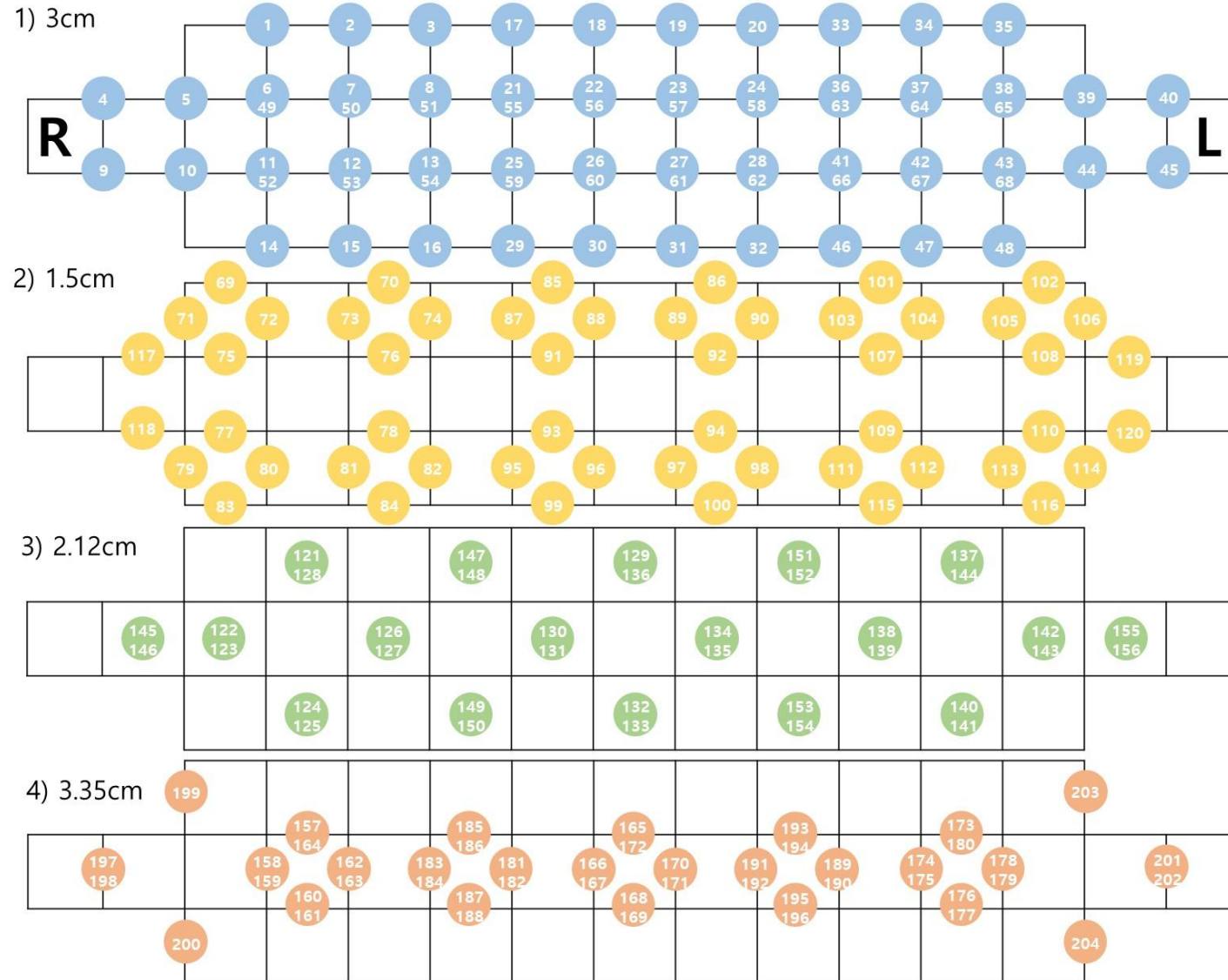


Left

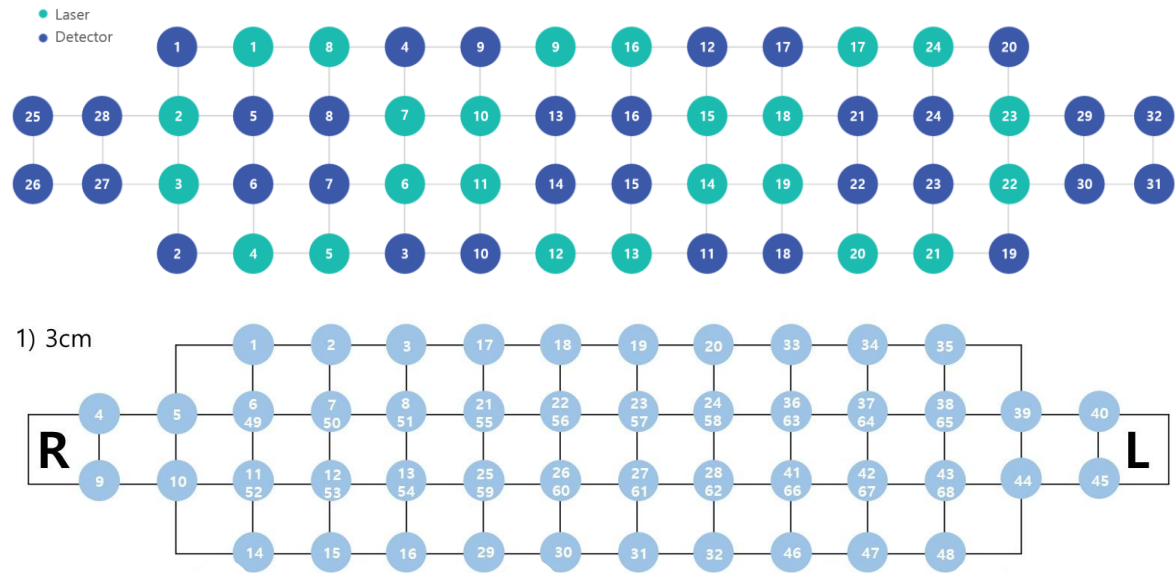
- TX
- RX



Multi-distance Channel Configuration

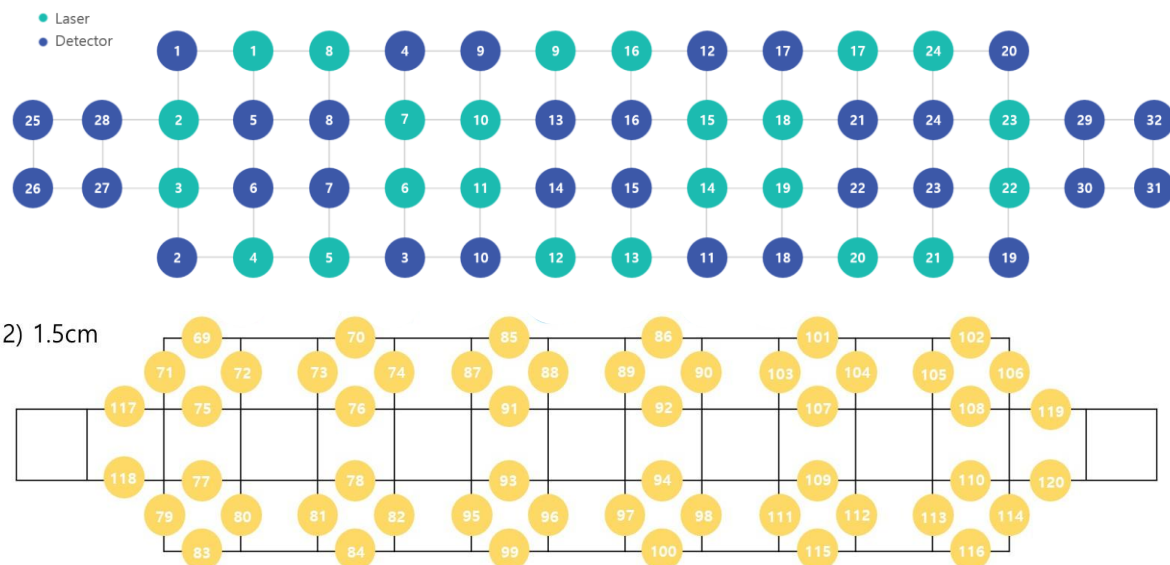


Source-Detector Pairing: 3cm



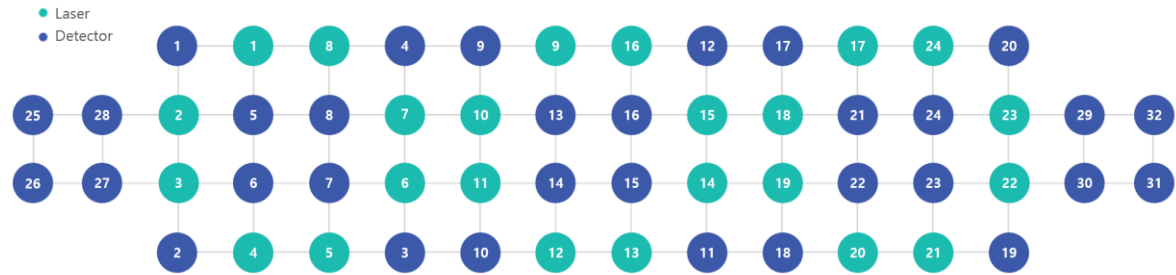
3cm S-D distance channels											
CH	Source	Detector	CH	Source	Detector	CH	Source	Detector	CH	Source	Detector
1	8	1	18	16	9	35	17	20	52	4	5
2	1	4	19	9	12	36	15	21	53	5	8
3	8	9	20	16	17	37	18	24	54	11	7
4	2	25	21	11	9	38	23	21	55	7	13
5	3	1	22	10	16	39	22	20	56	9	14
6	2	8	23	16	15	40	23	32	57	15	13
7	7	5	24	14	12	41	14	22	58	18	16
8	6	4	25	10	10	42	19	23	59	6	14
9	3	26	26	11	15	43	22	22	60	12	13
10	2	2	27	14	14	44	23	19	61	13	16
11	3	7	28	15	11	45	22	31	62	19	15
12	6	6	29	12	3	46	20	11	63	19	17
13	7	3	30	13	10	47	21	18	64	17	22
14	5	2	31	12	11	48	20	19	65	24	23
15	4	3	32	13	18	49	1	6	66	18	18
16	5	10	33	17	12	50	8	7	67	20	21
17	9	4	34	24	17	51	10	8	68	21	24

Source-Detector Pairing: 1.5cm



1.5cm S-D distance channels								
CH	Source	Detector	CH	Source	Detector	CH	Source	Detector
69	1	1	86	16	12	103	18	17
70	8	4	87	10	9	104	17	21
71	2	1	88	9	13	105	24	24
72	1	5	89	16	16	106	23	20
73	8	8	90	15	12	107	18	21
74	7	4	91	10	13	108	23	24
75	2	5	92	15	16	109	19	22
76	7	8	93	11	14	110	22	23
77	3	6	94	14	15	111	19	18
78	6	7	95	11	10	112	20	22
79	3	2	96	12	14	113	21	23
80	4	6	97	13	15	114	22	19
81	5	7	98	14	11	115	20	18
82	6	3	99	12	10	116	21	19
83	4	2	100	13	11	117	2	28
84	5	3	101	17	17	118	3	27
85	9	9	102	24	20	119	23	29
						120	22	30

Source-Detector Pairing: 2.12cm

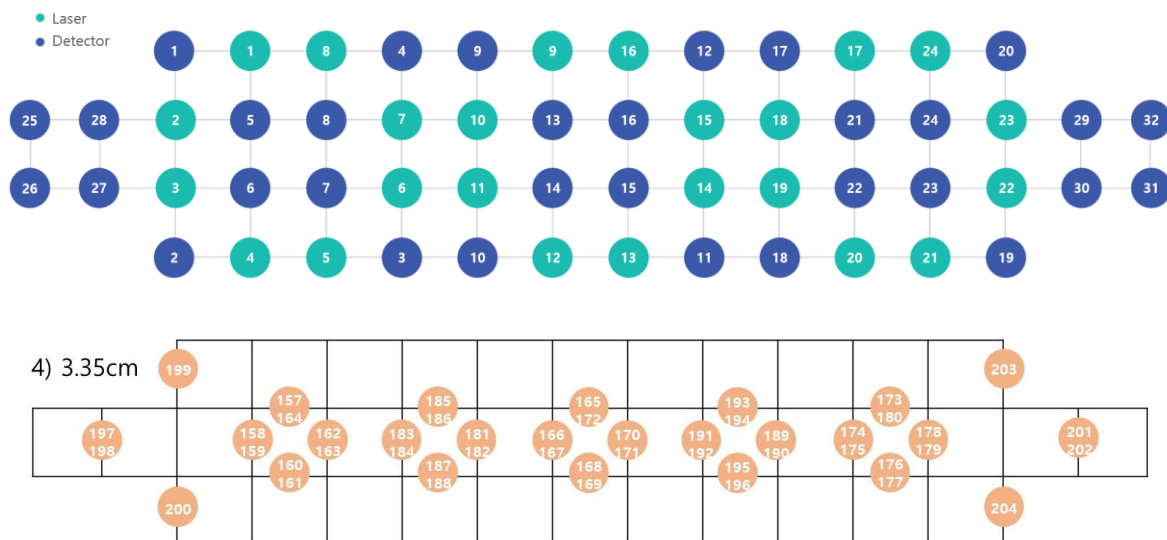


3) 2.12cm

3) 2.12cm			121 128		147 148		129 136		151 152		137 144			
	145 146	122 123		126 127		130 131		134 135		138 139		142 143	155 156	
			124 125		149 150		132 133		153 154		140 141			

2.12cm S-D distance channels					
CH	Source	Detector	CH	Source	Detector
121	1	8	139	19	21
122	2	6	140	20	23
123	3	5	141	21	22
124	4	7	142	22	24
125	5	6	143	23	23
126	6	8	144	24	21
127	7	7	145	2	27
128	8	5	146	3	28
129	9	16	147	7	9
130	10	14	148	10	4
131	11	13	149	6	10
132	12	15	150	11	3
133	13	14	151	15	17
134	14	16	152	18	12
135	15	15	153	14	18
136	16	13	154	19	11
137	17	24	155	22	29
138	18	22	156	23	30

Source-Detector Pairing: 3.35cm



3.35cm S-D distance channels								
CH	Source	Detector	CH	Source	Detector	CH	Source	Detector
157	1	7	173	17	23	189	14	21
158	2	7	174	18	23	190	15	22
159	3	8	175	19	24	191	18	15
160	4	8	176	20	24	192	19	16
161	5	5	177	21	21	193	14	17
162	6	5	178	22	21	194	19	12
163	7	6	179	23	22	195	15	18
164	8	6	180	24	22	196	18	11
165	9	15	181	6	13	197	2	26
166	10	15	182	7	14	198	3	25
167	11	16	183	10	7	199	1	28
168	12	16	184	11	8	200	4	27
169	13	13	185	6	9	201	22	32
170	14	13	186	11	4	202	23	31
171	15	14	187	7	10	203	24	29
172	16	14	188	10	3	204	21	30

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