

Neutron Wall detector angles

Definition of coordinate system

The spherical coordinate system used for the Neutron Wall is defined as follows:

- $(r, \theta, \phi) = (0 \text{ mm}, 0^\circ, 0^\circ)$: focal point of the Neutron Wall (usually the location of the source or the target).
- $\theta = 0^\circ$: z direction = direction of the incoming beam.
- $\phi = 0^\circ$: x direction = vertically up ($\phi = 180^\circ$ corresponds to one of the corners of the pentagonal detector).
- $r = 510 \text{ mm}$: front surface of the neutron detector segments.

Tables of angles

The table on the next page gives the angles θ and ϕ of the center positions of the detector segments. The detector segments are grouped in five rings (ring 0-4) containing segments with similar values of the θ angle. The subunit labels are the ones physically marked on the detectors. The segment numbering is the standard one used for the Neutron Wall.

Ring	Detector type	Detector number	Subunit label	Segment number	θ [°]	ϕ [°]
0	P	0	A	46	6.897	36.000
0	P	0	B	47	6.897	108.000
0	P	0	C	48	6.897	180.000
0	P	0	D	49	6.897	252.000
0	P	0	E	45	6.897	324.000
1	H1	6	B	36	18.540	15.268
1	H1	7	F	37	18.540	56.732
1	H1	7	B	38	18.540	87.268
1	H1	8	F	39	18.540	128.732
1	H1	8	B	40	18.540	159.268
1	H1	9	F	41	18.540	200.732
1	H1	9	B	42	18.540	231.268
1	H1	10	F	43	18.540	272.732
1	H1	10	B	44	18.540	303.268
1	H1	6	F	35	18.540	344.732
2	H1	6	D	25	30.301	0.000
2	H1	7	D	27	30.301	72.000
2	H1	8	D	29	30.301	144.000
2	H1	9	D	31	30.301	216.000
2	H1	10	D	33	30.301	288.000
2	H2	11	DE	26	34.866	36.000
2	H2	12	DE	28	34.866	108.000
2	H2	13	DE	30	34.866	180.000
2	H2	14	DE	32	34.866	252.000
2	H2	15	DE	34	34.866	324.000
3	H2	11	BC	3	46.784	27.087
3	H2	12	BC	8	46.784	99.087
3	H2	13	BC	13	46.784	171.087
3	H2	14	BC	18	46.784	243.087
3	H2	15	BC	23	46.784	315.087
3	H1	2	B	5	46.830	64.683
3	H1	3	B	10	46.830	136.683
3	H1	4	B	15	46.830	208.683
3	H1	5	B	20	46.830	280.683
3	H1	1	B	0	46.830	352.683
3	H1	1	D	2	47.200	7.061
3	H1	2	D	7	47.200	79.061
3	H1	3	D	12	47.200	151.061
3	H1	4	D	17	47.200	223.061
3	H1	5	D	22	47.200	295.061
3	H2	11	AF	4	47.210	44.824
3	H2	12	AF	9	47.210	116.824
3	H2	13	AF	14	47.210	188.824
3	H2	14	AF	19	47.210	260.824
3	H2	15	AF	24	47.210	332.824
4	H1	2	F	6	57.210	71.593
4	H1	3	F	11	57.210	143.593
4	H1	4	F	16	57.210	215.593
4	H1	5	F	21	57.210	287.593
4	H1	1	F	1	57.210	359.593