



Well-known Stereo Microphone Systems and their Angles

UdK Berlin
Sengpiel
04.97
RiLo

Stereo system name	Explication and origin	Directional pattern	Mic angle α_{LR}	Mic spacing a	Stereo Rec Angle SRA φ_{LR}	Direction by level difference $b_1(\Delta L)$	Direction by time difference $b_2(\Delta t)$
AB60	only time differences	(2 × omni)	0°	60 cm	$\pm 59^\circ = 118^\circ$	0%	100%
AB90	only time differences	(2 × omni)	0°	90 cm	$\pm 34^\circ = 68^\circ$	0%	100%
AB120	only time differences	(2 × omni)	0°	120 cm	$\pm 25^\circ = 50^\circ$	0%	100%
NOS	Time and level differences Nederlandse Omroep Stichting	2 × cardioid	$\pm 45^\circ = 90^\circ$	30 cm	$\pm 40.5^\circ = 81^\circ$	42%	58%
EBS	Time and level differences after Eberhard Sengpiel	2 × cardioid	$\pm 45^\circ = 90^\circ$	25 cm	$\pm 45^\circ = 90^\circ$	47%	53%
DIN	Time and level differences Proposal of a German Standard	2 × cardioid	$\pm 45^\circ = 90^\circ$	20 cm	$\pm 50.5^\circ = 101^\circ$	53%	47%
RAI	Time and level differences Radio Audizioni Italiane Radiotelevisione Italia	2 × cardioid	$\pm 50^\circ = 100^\circ$	21 cm	$\pm 46.5^\circ = 93^\circ$	53%	47%
ORTF	Time and level differences Office de Radiodiffusion-Télévision Française	2 × cardioid	$\pm 55^\circ = 110^\circ$	17 cm	$\pm 48^\circ = 96^\circ$	61%	39%
XY60	only level diff.	2 × cardioid	$\pm 30^\circ = 60^\circ$	0	$\pm 121^\circ = 242^\circ$	100%	0%
XY90	only level diff.	2 × cardioid	$\pm 45^\circ = 90^\circ$	0	$\pm 98^\circ = 196^\circ$	100%	0%
XY120	only level diff.	2 × cardioid	$\pm 60^\circ = 120^\circ$	0	$\pm 79^\circ = 158^\circ$	100%	0%
Blumlein	only level diff. after Alan Dower Blumlein 1932	2 × eight	$\pm 45^\circ = 90^\circ$	0	$\pm 38^\circ = 76^\circ$	100%	0%

Compilation of "standard" stereo microphone systems by equivalence stereophony with details of the used polar pattern, the axis angle and the microphone base. Furthermore, the calculated maximum recording for each stereo microphone system. The phantom sound sources are given, including the associated percentages of time and level difference for 100% phantom source shift.

α_{LR} = Full mic angle, as angled between microphone main axes.

a = Microphone basis, as distance between both microphones.

φ_{LR} = Full angle of the (hidden) stereo recording angle of the stereo microphone system.

$b_1(\Delta L)$ = Phantom source shift of the level difference ΔL in % from center for max. 18 dB (16 – 20 dB).

$b_2(\Delta t)$ = Phantom source shift of the time difference Δt in % from center for max. 1. ms (1 – 2 ms).

Stereo microphone systems - numerical values and tables: <http://www.sengpielaudio.com/Stereo-Mikrofonsysteme.pdf>

Visualization of all stereo systems with two Microphones <http://www.sengpielaudio.com/HejiaE.htm>