## Claims

1. Audio processor ~~(10)~~ comprising:

- an input interface for receiving at least two input audio channels ~~($12_1$, $12_2$; $12_3$, $12_4$; $12_5$)~~, each input audio channel ~~($12_1$, $12_2$; $12_3$, $12_4$; $12_5$)~~ being associated with a predetermined reproduction position of two loudspeakers ~~($26_1$, $26_2$)~~ on a loudspeaker axis ~~(16)~~;being a shortest distance between the two loudspeakers;

- a detector interface ~~(32)~~ for receiving a position signal ~~(18)~~ indicating an information on a position of the two loudspeakers ~~($26_1$, $26_2$)~~ with respect to an ear axis ~~(20)~~ of a listener ~~(28)~~, wherein the ear axis ~~(20)~~ and the loudspeaker axis ~~(16)~~ have an angle ~~(36)~~ to each other, being greater than 0° and lower than 180°;

- a mixer ~~(22)~~ for mixing the two input audio channels ~~($12_1$, $12_2$; $12_3$, $12_4$; $12_5$)~~ to obtain two output channels ~~($14_1$, $14_2$)~~ depending on the position signal ~~(18)~~, such that

  a portion of a second input audio channel ~~($12_2$)~~ being a right channel in a first output channel ~~($14_1$)~~ for a first angle ~~(36)~~ between the ear axis ~~(20)~~ and the loudspeaker axis ~~(16)~~ is greater than a portion of the second input audio channel ~~($12_2$)~~ in the first output channel ~~($14_1$)~~ for a second angle ~~(36)~~ between the ear axis ~~(20)~~ and the loudspeaker axis ~~(16)~~, wherein the first angle ~~(36)~~ is greater than the second angle ~~(36)~~ or

  a portion of a first input audio channel ~~($12_1$)~~ being a left channel in a second output channel ~~($14_2$)~~ for the first angle ~~(36)~~ is greater than a portion of the first input audio channel ~~($12_1$)~~ in the second output channel ~~($14_2$)~~ for the second angle ~~(36)~~, wherein the first angle ~~(36)~~ is greater than the second angle ~~(36)~~; and

- an output interface for outputting the two output channels (14$_1$, 14$_2$) to the two loudspeakers (26$_1$, 26$_2$).

wherein the input interface is configured to receive an upper left channel (HL) as a third input audio channel (12$_3$) and an upper right channel (HR) as a fourth input audio channel (12$_4$), wherein the mixing is performed such that a portion of the upper left channel (HL) in the first output channel (14$_1$) is greater than the portion of the right channel (R), wherein the angle (36) is between 0° and 90° and the portion of the right channel (R) in the second output channel (14$_2$) is greater than the portion of the upper left channel (HL), wherein the angle (36) is between 0° and 90° and a portion of the upper right channel (HR) in the first output channel (14$_1$) is greater than the portion of the left channel (L), wherein the angle (36) is between 90° and 180° and the portion of the left channel (L) in the second output channel (14$_2$) is greater than the portion of the upper right channel (HR), wherein the angle (36) is between 90° and 180°, or

wherein the input interface is configured to receive an upper channel (H), wherein he mixing is performed such that a portion of the upper channel (H) in the first output channel (14$_1$) is greater than the portion of the right channel (R), wherein the angle (36) is between 0° and 90° and the portion of the right channel (R) in the second output channel (14$_2$) is greater than the portion of the upper channel (H), wherein the angle (36) is between 0° and 90° and the portion of the upper channel (H) in the first output channel (14$_1$) is greater than the portion of the left channel (L), wherein the angle (36) is between 90° and 180° and the portion of the left channel (L) in the second output channel (14$_2$) is greater than the portion of the upper channel (H), wherein the angle (36) is between 90° and 180°, or

wherein the input interface is configured to receive the left channel (L) as the first input audio channel (12$_1$), the right channel (R) as the second input audio channel (12$_2$), the upper left channel (HL) as the third input

audio channel (12$_3$) and the upper right channel (HR) as the fourth input audio channel (12$_4$) wherein the mixer (22) is configured to generate, for an angle (36) equal to 90°, the first output channel (14$_1$) which comprises in total a portion of more than 30% from the third input audio channel (12$_3$) and more than 30% from the fourth input audio channel (12$_4$), and the second output channel (14$_2$) which comprises in total a portion of more than 30% from the first input audio channel (12$_1$) and more than 30% from the second input audio channel (12$_2$)., or

wherein the input interface is configured to receive the left channel (L) as the first input audio channel (12$_1$), the right channel (R) as the second input audio channel (12$_2$) and the upper channel (H) as a fifth input audio channel (12$_5$), wherein the mixer (22) is configured to generate, for an angle (36) equal to 90°, the first output channel (14$_1$) which comprises the fifth input audio channel (12$_5$), and the second output channel (14$_2$) which comprises a combination of the first and second input audio channel (12$_1$, 12$_2$).

2. The audio processor (10) according to claim 1, wherein the input interface is configured to receive a left channel (L) as the first input audio channel (12$_1$) and a right channel (R) as the second input audio channel (12$_2$), wherein

a portion of the left channel (L) in the first output channel (14$_1$) is greater than a portion of the right channel (R), wherein the angle (36) is between 0° and 90°, and

a portion of the right channel (R) in the second output channel (14$_2$) is greater than a portion of the left channel (L), wherein the angle (36) is between 0° and 90°, and

the portion of the right channel in the first output channel is greater than the portion of the left channel, wherein the angle is between 90° and 180°, and

the portion of the left channel ~~(L)~~ in the second output channel ~~($14_2$)~~ is greater than the portion of the right channel ~~(R)~~, wherein the angle ~~(36)~~ is between 90° and 180°.

3. The audio processor ~~(10)~~ according to any one of claims 1 to 2, wherein the mixer ~~(22)~~ is configured so that the portion of the second input channel ~~($12_2$)~~ in the first output channel ~~($14_1$)~~ or the portion of the first input channel ~~($12_1$)~~ in the second output channel ~~($14_2$)~~ or the portion of the first input channel ~~($12_1$)~~ in the first output channel ~~($14_1$)~~ or the portion of the second input channel ~~($12_2$)~~ in the second output channel ~~($14_2$)~~ is delayed with respect to the corresponding other portion.

4. The audio processor ~~(10)~~ according to any one of claims 1 to 3, wherein the mixer ~~(22)~~ comprises a matrix processor having variable matrix elements, wherein the variable matrix elements are adapted based on the position signal.

5. The audio processor ~~(10)~~ according to claim 4, wherein the matrix processor is configured to use complex matrix elements.

6. The audio processor ~~(10)~~ according to any one of claims 1 to 5, wherein the mixer ~~(22)~~ comprises

a first adder ~~($24_1$)~~ for adding a first processed ~~(K1)~~ first input audio channel ~~($12_1$)~~ and a third processed ~~(K3)~~ second input audio channel ~~($12_2$)~~, and

a second adder ~~($24_2$)~~ for adding a second processed ~~(K2)~~ first input audio channel ~~($12_2$)~~ and a fourth processed ~~(K4)~~ second input audio channel ~~($12_2$)~~,

wherein the first processed ~~(K1)~~ first input audio channel ~~($12_1$)~~ is processed using a first processor ~~($34_1$)~~ having a first gain value,

wherein the second processed (K2) first input audio channel ($12_1$) is processed using a second processor ($34_2$) having a second gain value,

wherein the third processed (K3) second input audio channel ($12_2$) is processed using a third processor ($34_3$) having a third gain value,

wherein the fourth processed (K4) second input audio channel ($12_2$) is processed using a fourth processor ($34_4$) having a fourth gain value,

wherein the first and fourth gain values decrease between 45° and 135° and the second and the third gain values increase between 45° and 135°.

7. A electrical device (30) comprising:

- an audio processor (10) according to any one of claims 1 to 6;
- the two loudspeakers ($26_1$, $26_2$); and
- a detector (40) for detecting the information on the position of the two loudspeakers ($26_1$, $26_2$) with respect to the ear axis (20) of the listener (28) and for generating the position signal (18) which is coupled to the detector interface (32).

8. A method for audio processing, comprising the following steps:

- receiving at least two input audio channels ($12_1$, $12_2$; $12_3$, $12_4$; $12_5$), each input audio channel ($12_1$, $12_2$; $12_3$, $12_4$; $12_5$) being associated with a predetermined reproduction position of two loudspeakers ($26_1$, $26_2$) on a loudspeaker axis (16);being a shortest distance between the two loudspeakers;
- receiving a position signal (18) indicating an information on a position of the two loudspeakers ($26_1$, $26_2$) with respect to an ear axis (20) of a

listener (28), wherein the ear axis (20) and the loudspeaker axis (16) have an angle (36) to each other, being greater than 0° and lower than 180°;

- mixing the at least two input audio channels ($12_1$, $12_2$; $12_3$, $12_4$; $12_5$) to obtain two output channels ($14_1$, $14_2$) depending on the position signal (18), such that

a portion of a second input audio channel ($12_2$) being a right channel in a first output channel ($14_1$) for a first angle (36) is greater than the portion of the second input audio channel ($12_2$) in the first output channel ($14_1$) for a second angle (36), wherein the first angle (36) is greater than the second angle (36) or

a portion of a first input audio channel ($12_1$) being a left channel in a second output channel ($14_2$) for the first angle (36) is greater than the portion of the first input audio channel ($12_1$) in the second output channel ($14_2$) for the second angle (36), wherein the first angle (36) is greater than the second angle (36); and

- outputting the two output channels ($14_1$, $14_2$) to the two loudspeakers ($26_1$, $26_2$);.

wherein an upper left channel is received as a third input audio channel and an upper right channel is received as a fourth input audio channel, wherein the mixing is performed such that a portion of the upper left channel in the first output channel is greater than the portion of the right channel, wherein the angle is between 0° and 90° and the portion of the right channel in the second output channel is greater than the portion of the upper left channel, wherein the angle is between 0° and 90° and a portion of the upper right channel in the first output channel is greater than the portion of the left channel, wherein the angle is between 90°

and 180° and the portion of the left channel in the second output channel is greater than the portion of the upper right channel, wherein the angle is between 90° and 180°, or

wherein an upper channel is received, wherein n the mixing is performed such that a portion of the upper channel in the first output channel is greater than the portion of the right channel, wherein the angle is between 0° and 90° and the portion of the right channel in the second output channel is greater than the portion of the upper channel, wherein the angle is between 0° and 90° and the portion of the upper channel in the first output channel is greater than the portion of the left channel, wherein the angle is between 90° and 180° and the portion of the left channel in the second output channel is greater than the portion of the upper channel, wherein the angle is between 90° and 180°, or

wherein the left channel is received as the first input audio channel, the right channel is received as the second input audio channel, the upper left channel is received as the third input audio channel and the upper right channel is received as the fourth input audio channel, wherein the mixing is performed such that, for an angle equal to 90°, the first output channel which comprises in total a portion of more than 30% from the third input audio channel and more than 30% from the fourth input audio channel, and the second output channel which comprises in total a portion of more than 30% from the first input audio channel and more than 30% from the second input audio channel are generated, or

wherein the input interface is configured to receive the left channel as the first input audio channel, the right channel as the second input audio channel and the upper channel as a fifth input audio channel, wherein the mixing is performed such that, for an angle equal to 90°, the first output channel which comprises the fifth

input audio channel, and the second output channel which comprises a combination of the first and second input audio channel are generated.

9. A computer program comprising a program code for executing the method according to claim 8, when the computer program is running on a computer or on a processor.