Claims

1. A processing system for processing an input signal to produce three-dimensional audio effects, the processing system comprising:

a cue sending path configured to extract a set of binaural cues from the input signal and further configured to send at least a portion of the extracted set of binaural cues to at least one directional loudspeaker for transmission, said at least one directional loudspeaker being a parametric loudspeaker for generating a modulated ultrasonic wave; and

an ambience sending path configured to send at least a part of the input signal comprising ambience sounds to at least one conventional loudspeaker for transmission.

2. A processing system according to claim 1, wherein the ambience sending path comprises an ambience extraction unit configured to subtract from the input signal at least a portion of the extracted set of binaural cues to extract the part of the input signal comprising ambience sounds.

3. A processing system according to claim 2, wherein the portion of the extracted set of binaural cues to be subtracted from the input signal is adjustable.

4. A processing system according to any of the preceding claims, wherein the portion of the extracted set of binaural cues to be sent to the at least one directional loudspeaker is adjustable.

5. A processing system according to any of the preceding claims, wherein the cue sending path comprises a cue extraction module configured to extract the set of binaural cues from the input signal.

6. A processing system according to claim 5, wherein the processing system is coupled with a plurality of conventional loudspeakers comprising surround loudspeakers and non-surround loudspeakers; and

wherein the ambience sending path is configured to send at least a portion of the extracted set of binaural cues to the surround loudspeakers for transmission and is further configured to send the part of the input signal comprising ambience sounds to the non-surround loudspeakers for transmission.

20. An audio system comprising:

a processing system for processing an input signal to produce three-dimensional audio effects according to any of the preceding claims;

at least one directional loudspeaker configured to receive the portion of the extracted set of binaural cues for transmission, said at least one directional loudspeaker being a parametric loudspeaker for generating a modulated ultrasonic wave; and

at least one conventional loudspeaker configured to receive the part of the input signal comprising ambience sounds for transmission.

21. An audio system according to claim 20 when dependent on claim 19, the audio system further comprising:

a steering mechanism configured to cooperate with the video tracking module of the processing system for steering a sound beam from the at least one directional loudspeaker according to one or both of the user's position and the user's head movements.

22. A method for processing an input signal to produce three-dimensional audio effects, the method comprising the steps of:

extracting a set of binaural cues from the input signal and sending at least a portion of the extracted set of binaural cues to at least one directional loudspeaker for transmission, said at least one directional loudspeaker being a parametric loudspeaker for generating a modulated ultrasonic wave; and

sending at least a part of the input signal comprising ambience sounds to at least one conventional loudspeaker for transmission.