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(21) International Application Number: PCT/AU99/00002 (22) International Filing Date: 6 January 1999 (06.01.99) (30) Priority Data: <table border="0"> <tr> <td>PP 2595</td> <td>25 March 1998 (25.03.98)</td> <td>AU</td> </tr> <tr> <td>PP 2710</td> <td>31 March 1998 (31.03.98)</td> <td>AU</td> </tr> <tr> <td>PP 2709</td> <td>31 March 1998 (31.03.98)</td> <td>AU</td> </tr> <tr> <td>PP 7164</td> <td>12 November 1998 (12.11.98)</td> <td>AU</td> </tr> </table> (71) Applicant (for all designated States except US): LAKE DSP PTY. LTD. [AU/AU]; Suite 502, Level 5, 51-55 Mountain Street, Ultimo, NSW 2007 (AU). (72) Inventors; and (75) Inventors/Applicants (for US only): McGRATH, David, Stanley [AU/AU]; 58 Imperial Avenue, Bondi, NSW 2026 (AU). McKEAG, Adam, Richard [AU/AU]; 69 Stuart Street, Blakehurst, NSW 2221 (AU). DICKENS, Glenn, Norman [AU/AU]; 71/28 Torrens Street, Braddon, ACT 2162 (AU). CARTWRIGHT, Richard, James [AU/AU]; 6 Orinoco Street, Pymble, NSW 2073 (AU). REILLY, Andrew, Peter [AU/AU]; 36 Acton Street, Hurlstone Park, NSW 2193 (AU).		PP 2595	25 March 1998 (25.03.98)	AU	PP 2710	31 March 1998 (31.03.98)	AU	PP 2709	31 March 1998 (31.03.98)	AU	PP 7164	12 November 1998 (12.11.98)	AU	(74) Agent: FREEHILLS PATENT ATTORNEYS; Level 32, MLC Centre, Martin Place, Sydney, NSW 2000 (AU). (81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>With amended claims.</i>
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(54) Title: AUDIO SIGNAL PROCESSING METHOD AND APPARATUS (57) Abstract A method of processing a series of input audio signals representing a series of virtual audio sound sources placed at predetermined positions around a listener to produce a reduced set of audio output signals for playback over speaker devices placed around a listener, the method comprising the steps of: (a) for each of the input audio signals and for each of the audio output signals: (i) convolving the input audio signals with an initial head portion of a corresponding impulse response mapping substantially the initial sound and early reflections for an impulse response of a corresponding virtual audio source to a corresponding speaker device so as to form a series of initial responses; (b) for each of the input audio signals and for each of the audio output signals: (i) forming a combined mix from the audio input signals; and (ii) forming a combined convolution tail from the tails of the corresponding impulse responses; (iii) convolving the combined mix with the combined convolution tail to form a combined tail response; (c) for each of the audio output signals: (i) combining a corresponding series of initial responses and a corresponding combined tail response to form the audio output signal.														