

Title (en)

Method and apparatus for avoiding unmasking of coding noise when mixing perceptually coded multi-channel audio signals

Title (de)

Verfahren und Vorrichtung zur Verhinderung der Demaskierung von Codierungsrauschen beim Mischen wahrnehmungscodierter Mehrkanal-Audiosignale

Title (fr)

Procédé et appareil pour éviter de démasquer le bruit de codage lors du mixage de signaux audio multicanaux perceptuellement codés

Publication

EP 2688065 A1 20140122 (EN)

Application

EP 12305860 A 20120716

Priority

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Abstract (en)

Playback of certain multi-channel audio signal representations on a particular loudspeaker set-up requires a special rendering, which usually consists of a matrixing operation. If a particular individual loudspeaker set-up on which the matrix of the matrixing operation depends is not known at the perceptual coding stage, a noise unmasking problem occurs. According to the invention, this problem can be solved by decorrelating the individual audio channel signals before perceptual encoding and recorrelating them after the perceptual decoding.

IPC 8 full level

G10L 19/008 (2013.01); **H04S 3/02** (2006.01)

CPC (source: EP)

G10L 19/008 (2013.01); **H04S 3/02** (2013.01)

Citation (applicant)

- ERIK HELLERUD; TAN BURNETT; AUDUN SOLVANG; U. PETER SVENSSON: "Encoding Higher Order Ambisonics with AAC", 124TH AES CONVENTION, 2008
- JOLLIFFE, I. T.: "Principal Component Analysis", 2002, SPRINGER
- "Three-Dimensional Surround Sound Systems Based on Spherical Harmonics", J. AUDIO ENG. SOC., vol. 53, no. 11, 2005, pages 1004 - 1025
- SOLEDAD TORRES-GUIJARRO; JON A. BERACOECHEA-ALAVA; LUIS I. ORTIZ-BERENGUER; F. JAVIER CASAJUS-QUIROS: "Inter-channel de-correlation for perceptual audio coding", APPLIED ACOUSTICS, vol. 66, no. 8, 2005, pages 889 - 901
- YANG, DAI; AI, HONGMEI; KYRIAKAKIS, C.; KUO, C. -C.: "J. High-fidelity multichannel audio coding with Karhunen-Loeve transform", IEEE TRANSACTIONS ON SPEECH AND AUDIO PROCESSING, vol. 11, no. 4, 2003, pages 365 - 380, XP011099062, DOI: doi:10.1109/TSA.2003.814375
- KATE, W.R.T. TEN; BOERS, P.M.; MAKIVIRTA, A.; KUUSAMA, J.; CHRISTENSEN, K.E.; SORENSEN, E.: "Matrixing of bit rate reduced audio signals", PROC. OF THE ICASSP, no. 2, March 1992 (1992-03-01), pages 205 - 208, XP000356973, DOI: doi:10.1109/ICASSP.1992.226084
- KATE, WARNER R.: "Compatibility Matrixing of Multichannel Bit-Rate Reduced Audio Signals", 96TH CONVENTION OF THE AUDIO ENG. SOC., February 1994 (1994-02-01)

Citation (search report)

- [I] MAURI VÄÄNÄNEN: "Robustness Issues in Multi-View Audio Coding", AES CONVENTION 125; OCTOBER 2008, AES, 60 EAST 42ND STREET, ROOM 2520 NEW YORK 10165-2520, USA, 1 October 2008 (2008-10-01), XP040508860
- [A] YANG DAI ET AL: "An Inter-Channel Redundancy Removal Approach for High-Quality Multichannel Audio Compression", 22 September 2000 (2000-09-22), pages 1 - 14, XP002517098, Retrieved from the Internet <URL:http://www.aes.org/tmpFiles/elib/20090227/9100.pdf> [retrieved on 20000901]
- [AD] POLETTI M A: "THREE-DIMENSIONAL SURROUND SOUND SYSTEMS", JOURNAL OF THE AUDIO ENGINEERING SOCIETY, AUDIO ENGINEERING SOCIETY, NEW YORK, NY, US, vol. 53, no. 11, 1 November 2005 (2005-11-01), pages 1004 - 1025, XP001243400, ISSN: 1549-4950
- [AD] BURNETT IAN ET AL: "Encoding Higher Order Ambisonics with AAC", AES CONVENTION 124; MAY 2008, AES, 60 EAST 42ND STREET, ROOM 2520 NEW YORK 10165-2520, USA, 1 May 2008 (2008-05-01), XP040508582

Cited by

CN110827840A; CN109410960A; JP2017525318A; RU2741763C2; WO2018001500A1; US9818413B2; US10089992B2; US10192559B2; US10388292B2; US10629212B2; US10127914B2; US10679634B2; US11462222B2; US11830504B2; US9930464B2; US10334382B2; US10542364B2; US10779104B2; US11395084B2; US11722830B2; US12069465B2; WO2014090660A1; EP3496096A1; EP3996090A1

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BA ME

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