(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
14 April 2022 (14.04.2022)

WIPO | PCT

(10) International Publication Number
WO 2022/074201 A3

(51) International Patent Classification:
G10L 19/008 (2013.01)

(21) International Application Number:
PCT/EP2021/077873

(22) International Filing Date:
08 October 2021 (08.10.2021)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

20201093.0	09 October 2020 (09.10.2020)	EP
20207517.2	13 November 2020 (13.11.2020)	EP
21180869.6	22 June 2021 (22.06.2021)	EP

(71) Applicant: **FRAUNHOFER-GESELLSCHAFT ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG E.V.** [DE/DE]; Hansastraße 27c, 80686 München (DE).

(72) Inventors: **REUTELHUBER, Franz**; c/o Fraunhofer-Institut für Integrierte Schaltungen IIS, Am Wolfsmantel 33, 91058 Erlangen (DE). **FUCHS, Guillaume**; c/o Fraunhofer-Institut für Integrierte Schaltungen IIS, Am Wolfsmantel 33, 91058 Erlangen (DE). **MULTRUS, Markus**; c/o Fraunhofer-Institut für Integrierte Schaltungen IIS, Am Wolfsmantel 33, 91058 Erlangen (DE). **FOTOPOULOU, Eleni**; c/o Fraunhofer-Institut für Integrierte Schaltungen IIS, Am Wolfsmantel 33, 91058 Erlangen (DE). **BAYER, Stefan**; c/o Fraunhofer-Institut für Integrierte Schaltungen IIS, Am Wolfsmantel 33, 91058 Erlangen (DE). **BÜTHE, Jan**; c/o Fraunhofer-Institut für Integrierte Schaltungen IIS, Am Wolfsmantel 33, 91058 Erlangen (DE). **DÖHLA, Stefan**; c/o Fraunhofer-Institut für Integrierte Schaltungen IIS, Am Wolfsmantel 33, 91058 Erlangen (DE).

(54) Title: APPARATUS, METHOD, OR COMPUTER PROGRAM FOR PROCESSING AN ENCODED AUDIO SCENE USING A BANDWIDTH EXTENSION

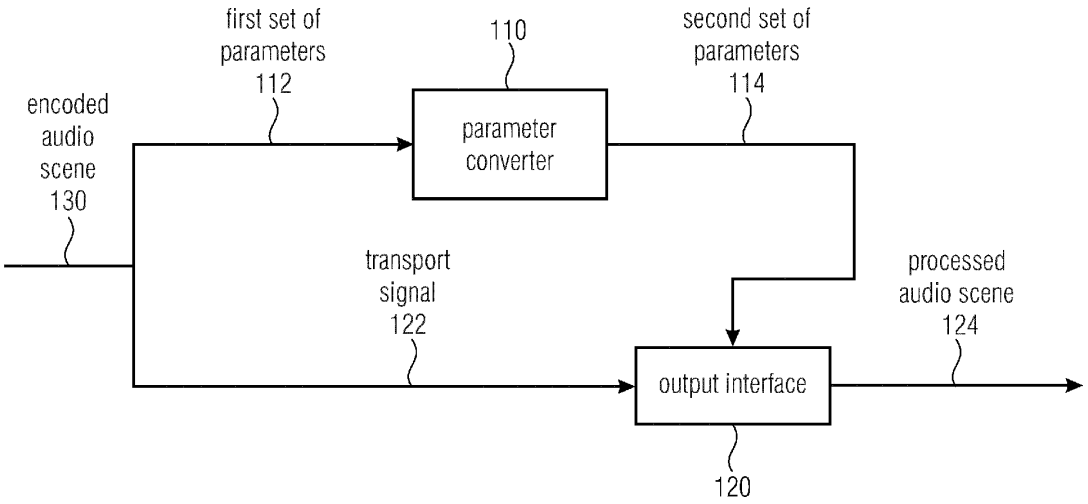

Fig. 1

(57) Abstract: Apparatus for processing an audio scene (130) representing a sound field, the audio scene comprising information on a transport signal (122) and a set of parameters (112;114). The apparatus comprising an output interface (120) for generating a processed audio scene (124) using the set of parameters (112; 114) and the information on the transport signal (122), wherein the output interface (120) is configured to generate a raw representation of two or more channels using the set of parameters (112; 114) and the transport signal (112; 144) and a multichannel enhancer (990) for generating an enhancement representation of the two or more channels using the transport signal (122), and a signal combiner (940) for combining the raw representation of the two or more channels and the enhancement representation of the two or more channels to obtain the processed audio scene (124).

WO 2022/074201 A3

[Continued on next page]

(74) **Agent: SCHENK, Markus** et al.; Schoppe, Zimmermann, Stöckeler, Zinkler, Schenk & Partner mbB, Radlkoferstr. 2, 81373 München (DE).

(81) **Designated States** *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) **Designated States** *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) **Date of publication of the international search report:**
19 May 2022 (19.05.2022)