



- (51) **International Patent Classification:**
H04S 7/00 (2006.01)
- (21) **International Application Number:**
PCT/EP2022/081092
- (22) **International Filing Date:**
08 November 2022 (08.11.2022)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
21207274.8 09 November 2021 (09.11.2021) EP
- (71) **Applicants:** **FRAUNHOFER-GESELLSCHAFT ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG E.V.** [DE/DE]; Hansastraße 27c, 80686 München (DE). **FRIEDRICH-ALEXANDER-UNIVERSITÄT ERLANGEN-NÜRNBERG** [DE/DE]; Schlossplatz 4, 91054 Erlangen (DE).
- (72) **Inventors:** **SILZLE, Andreas**; c/o Fraunhofer-Institut für Integrierte Schaltungen IIS, Am Wolfsmantel 33, 91058 Erlangen (DE). **HERRE, Jürgen**; c/o Fraunhofer-Institut für Integrierte Schaltungen IIS, Am Wolfsmantel 33, 91058 Erlangen (DE). **ROSENBERGER, Dennis**; c/o Fraunhofer-Institut für Integrierte Schaltungen IIS, Am Wolf-

smantel 33, 91058 Erlangen (DE). **PAULUS, Jouni**; c/o Fraunhofer-Institut für Integrierte Schaltungen IIS, Am Wolfsmantel 33, 91058 Erlangen (DE). **BORSS, Christian**; c/o Fraunhofer-Institut für Integrierte Schaltungen IIS, Am Wolfsmantel 33, 91058 Erlangen (DE). **ADAMI, Alexander**; c/o Fraunhofer-Institut für Integrierte Schaltungen IIS, Am Wolfsmantel 33, 91058 Erlangen (DE).

- (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, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, 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, CV,

- (54) **Title:** CONCEPTS FOR AURALIZATION USING EARLY REFLECTION PATTERNS

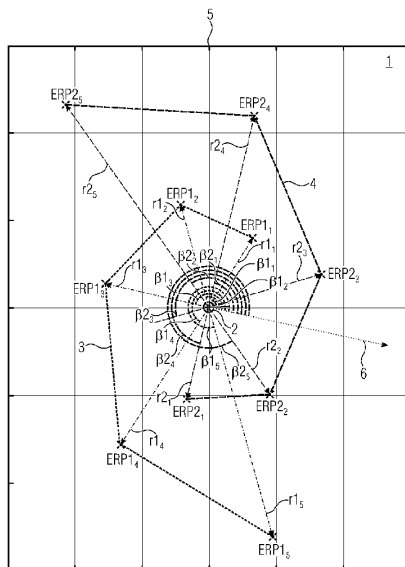


Fig. 2

(57) **Abstract:** The present application concerns early reflection processing concepts for auralization. Embodiments relate to apparatuses and methods for sound rendering considering early reflections and to apparatuses and methods for determining an early reflection pattern.

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, ME, 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))