

(51) International Patent Classification:
G10L 19/032 (2013.01)(21) International Application Number:
PCT/EP2012/076746(22) International Filing Date:
21 December 2012 (21.12.2012)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/588,998 20 January 2012 (20.01.2012) US(71) Applicant: **FRAUNHOFER-GESELLSCHAFT ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG E.V.** [DE/DE]; Hansastraße 27c, 80686 München (DE).(72) Inventors: **DISCH, Sascha**; Wilhelmstrasse 70, 90766 Fürth (DE). **SCHUBERT, Benjamin**; Zickstrasse 6, 90429 Nürnberg (DE). **GEIGER, Ralf**; Jakob-Herz-Weg 36, 91052 Erlangen (DE). **DIETZ, Martin**; Deutschhermstr. 37, 90429 Nürnberg (DE).(74) Agents: **SCHENK, Markus** et al.; Schoppe, Zimmermann, Stöckeler & Zinkler, P.O. Box 246, 82043 Pullach (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, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, 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, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, 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, 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, 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))

(54) Title: APPARATUS AND METHOD FOR AUDIO ENCODING AND DECODING EMPLOYING SINUSOIDAL SUBSTITUTION

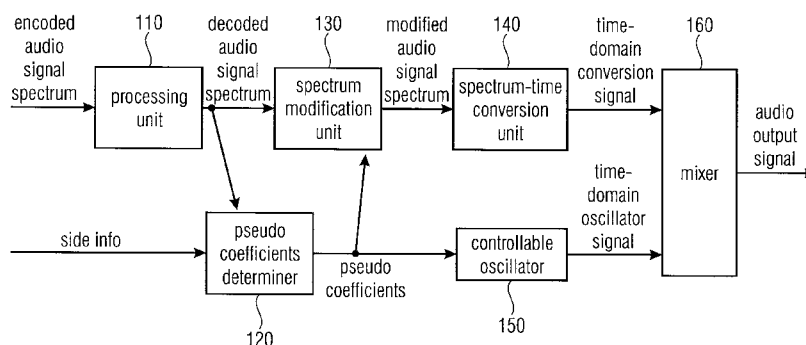


FIG 1

(57) **Abstract:** An apparatus for generating an audio output signal based on an encoded audio signal spectrum is provided. The apparatus comprises a processing unit (110), a pseudo coefficients determiner (120), a spectrum modification unit (130), a spectrum-time conversion unit (140), a controllable oscillator (150) and a mixer (160). The pseudo coefficients determiner (120) is configured to determine one or more pseudo coefficients of the decoded audio signal spectrum, each of the pseudo coefficients having a spectral location and a spectral value. The spectrum modification unit (130) is configured to set the one or more pseudo coefficients to a predefined value to obtain a modified audio signal spectrum. The spectrum-time conversion unit (140) is configured to convert the modified audio signal spectrum to a time-domain to obtain a time-domain conversion signal. The controllable oscillator (150) is configured to generate a time-domain oscillator signal, the controllable oscillator (150) being controlled by the spectral location and the spectral value of at least one of the one or more pseudo coefficients. The mixer (160) is configured to mix the time-domain conversion signal and the time-domain oscillator signal to obtain the audio output signal.