



(51) International Patent Classification:

H04B 10/524 (2013.01) H04B 10/11 (2013.01)
H04B 10/67 (2013.01) H04B 10/69 (2013.01)
H04B 10/25 (2013.01)

(21) International Application Number:

PCT/US2023/069524

(22) International Filing Date:

30 June 2023 (30.06.2023)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

17/932,364 15 September 2022 (15.09.2022) US

(71) Applicant: **ATTOCHRON, LLC** [US/US]; P.O. Box 1036, Lexington, Virginia 22450 (US).

(72) Inventors: **CHAFFEE, Thomas M.**; P.O. Box 1036, Lexington, Virginia 22450 (US). **KNOX, Wayne H.**; P.O. Box 1036, Lexington, Virginia 22450 (US). **LEBON, Alexander B.**; P.O. Box 1036, Lexington, Virginia 22450 (US). **GREGORY, Brian M.**; P.O. Box 1036, Lexington, Virginia 22450 (US). **COLANGELO, Taz M.**; P.O. Box 1036, Lexington, Virginia 22450 (US).

(74) Agent: **SLAFKOSKY, Alexander**; Scale LLP, 548 Market Street, Suite 86147, San Francisco, California 94104 (US).

(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, MU, 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, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, 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).

(54) Title: REDUCING SCINTILLATION NOISE IN FREE SPACE OPTICAL COMMUNICATIONS

100

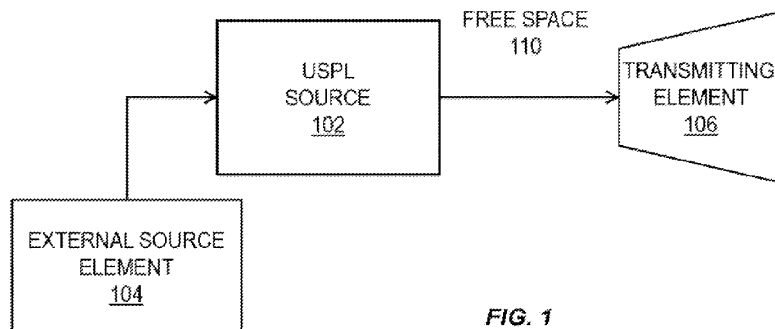


FIG. 1

(57) Abstract: In some embodiments, an optical communication system may include an optical source, a modulator, and a photoreceiver. The optical source may be configured to generate a beam comprising a series of light pulses. The photoreceiver may have a detection window duration of 1 nanosecond or less. When a first pulse travels through a variably refractive medium, photons in the first pulse may be refracted to travel along different ray paths to arrive at the photoreceiver according to a temporal distribution curve. A full width at half maximum (FWHM) value of the temporal distribution curve may be greater than a coherence time value of the first pulse, and the detection window of the photoreceiver may be greater than the FWHM value of the temporal distribution curve.

[Continued on next page]

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

Published:

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