

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
18 March 2004 (18.03.2004)

PCT

(10) International Publication Number
WO 2004/023218 A2

(51) International Patent Classification⁷: **G03H 1/00**

(21) International Application Number:
PCT/US2003/027574

(22) International Filing Date:
3 September 2003 (03.09.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/234,043 3 September 2002 (03.09.2002) US
10/234,042 3 September 2002 (03.09.2002) US
10/234,044 3 September 2002 (03.09.2002) US

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(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

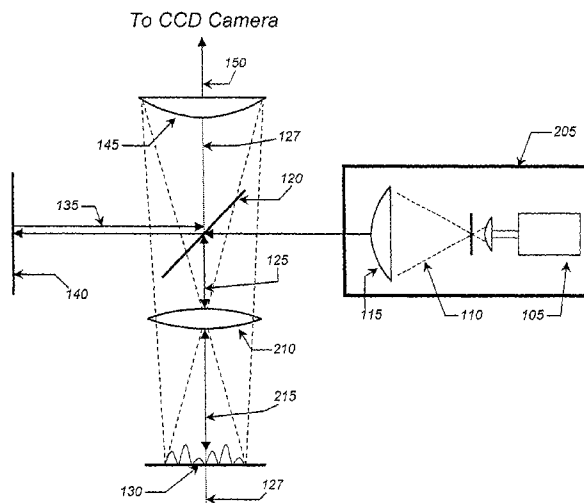
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: CONTENT-BASED FUSED OFF-AXIS ILLUMINATION DIRECT-TO-DIGITAL HOLOGRAPHY



(57) Abstract: Systems and methods are described for content-based fused off-axis illumination direct-to-digital holography. A method includes calculating an illumination angle with respect to an optical axis defined by a focusing lens as a function of data representing a Fourier analyzed spatially heterodyne hologram; recording a content based spatially heterodyne hologram including spatially heterodyne fringes for Fourier analysis; Fourier analyzing the recorded content based spatially heterodyne hologram including spatially heterodyne fringes by transforming axes of the recorded content based spatially heterodyne hologram including spatially heterodyne fringes in Fourier space to sit on top of a heterodyne carrier frequency defined as an angle between the reference beam and the object beam; applying a digital filter to cut off signals around an original origin; and then performing an inverse Fourier transform.