

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
7 April 2011 (07.04.2011)

PCT

(10) International Publication Number
WO 2011/039501 A3

- (51) International Patent Classification:
G01H 9/00 (2006.01) G01D 5/353 (2006.01)
- (21) International Application Number:
PCT/GB2010/001802
- (22) International Filing Date:
24 September 2010 (24.09.2010)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
0917150.5 30 September 2009 (30.09.2009) GB
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- (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, 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, PE, PG, PH, PL, PT, RO, RS, RU, 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, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

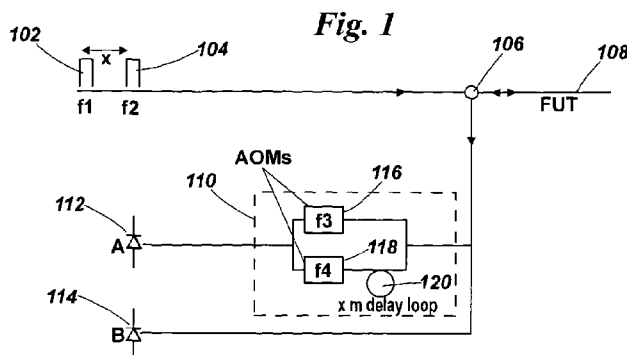
— of inventorship (Rule 4.17(iv))

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:
16 February 2012

(54) Title: PHASE BASED SENSING



(57) Abstract: A method of distributed acoustic sensing (DAS) whereby the derivative or rate of change of a signal backscattered from a fibre is measured. The change, or derivative of the phase measured in this way has a much smaller amplitude than the signal itself if the difference between the two times at which the signal is measured is much less than the period of the signal being measured, resulting in lower sensitivity. Frequency shifts can be applied to temporally displaced return signals to compare the rate of change, for example by employing an output interferometer arranged to modulate the signal in each arm by a different frequency shift.



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INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2010/001802

A. CLASSIFICATION OF SUBJECT MATTER INV. G01H9/00 G01D5/353 ADD.		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) G01H G01D		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, INSPEC, COMPENDEX		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
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Y	GB 2 442 745 A (AT & T CORP [US]) 16 April 2008 (2008-04-16) cited in the application	1,2,5,10
A	page 6, line 3, paragraph 0021 - line 10 page 9, line 3, paragraph 0027	3,4,6-9, 11-17
Y	WO 2008/110780 A2 (QINETIQ LTD [GB]; CRICKMORE ROGER IAN [GB]; DE FREITAS JOLYON [GB]) 18 September 2008 (2008-09-18) cited in the application	1,2,5,10
A	page 2, line 10 - page 3, line 14	3,4,6-9, 11-17
A	US 4 947 037 A (NASH PHILIP J [GB] ET AL) 7 August 1990 (1990-08-07) column 1, line 25 - line 28	1,5,6,13
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* Special categories of cited documents :		
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed		"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family
Date of the actual completion of the international search	Date of mailing of the international search report	
22 December 2011	29/12/2011	
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Swartjes, Harrie	

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2010/001802

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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