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- (51) **International Patent Classification:**
H01S 5/34 (2006.01)
- (21) **International Application Number:**
PCT/US2009/066571
- (22) **International Filing Date:**
3 December 2009 (03.12.2009)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/119,414 3 December 2008 (03.12.2008) US
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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, 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, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,

[Continued on next page]

- (54) Title:** SEMICONDUCTOR LASER WITH LOW RELATIVE INTENSITY NOISE OF INDIVIDUAL LONGITUDINAL MODES AND OPTICAL TRANSMISSION SYSTEM INCORPORATING THE LASER

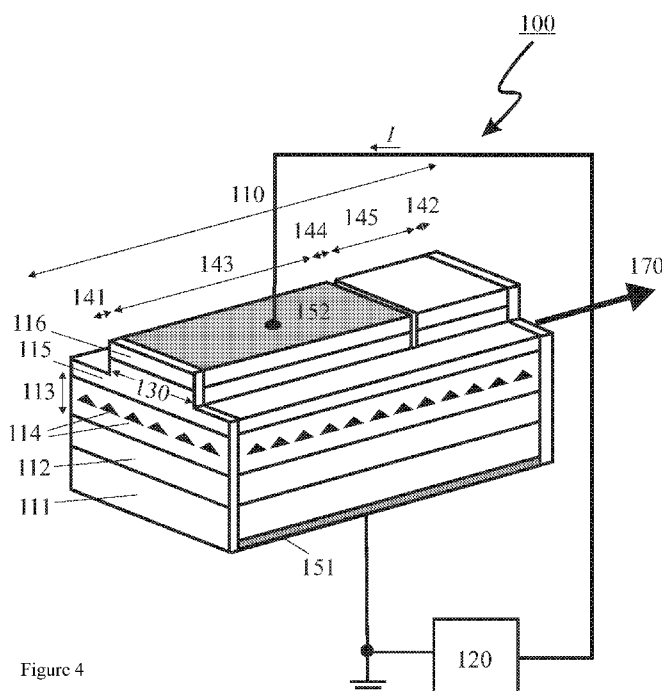


Figure 4

(57) Abstract: A semiconductor laser comprises an electrically isolated active section and at least one noise reducing section and operates on a ground state transition of a quantum dot array having inhomogeneous broadening greater than 10 nm. The laser preferably emits more than 10 optical modes such that a total relative intensity noise of each optical mode is less than 0.2% in the 0.001 GHz to 10 GHz range. The spectral power density is preferably higher than 2mW/nm. An optical transmission system and a method of operating a quantum dot laser with low relative intensity noise of each optical mode are also disclosed.



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).

(88) Date of publication of the international search report:
23 September 2010

Published:

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

(15) Information about Correction:

Previous Correction:
see Notice of 29 July 2010

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2009/066571

A. CLASSIFICATION OF SUBJECT MATTER

INV. H01S5/34

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)

H01S

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, INSPEC, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2007/065614 A2 (NL NANOSEMICONDUCTOR GMBH [DE]; KOVSH ALEXEY [DE]; ZHUKOV ALEXEY [RU];) 14 June 2007 (2007-06-14) figure 21	1-67
X	US 2006/227825 A1 (KOVSH ALEXEY [DE] ET AL) 12 October 2006 (2006-10-12) paragraph [0083]; figure 5	1-67
X	US 2008/198444 A1 (OTSUBO KOJI [JP]) 21 August 2008 (2008-08-21) paragraph [0038]; figure 1	1-67
X	US 2008/151950 A1 (LIN KUO-JUI [TW] ET AL) 26 June 2008 (2008-06-26) abstract; figure 8	1-67



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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"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

7 June 2010

Date of mailing of the international search report

18/06/2010

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2009/066571

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2007065614 A2	14-06-2007	JP 2009518833 T US 2007189348 A1	07-05-2009 16-08-2007
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