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(54) Title: HOUSING QUBIT DEVICES IN AN ELECTROMAGNETIC WAVEGUIDE SYSTEM

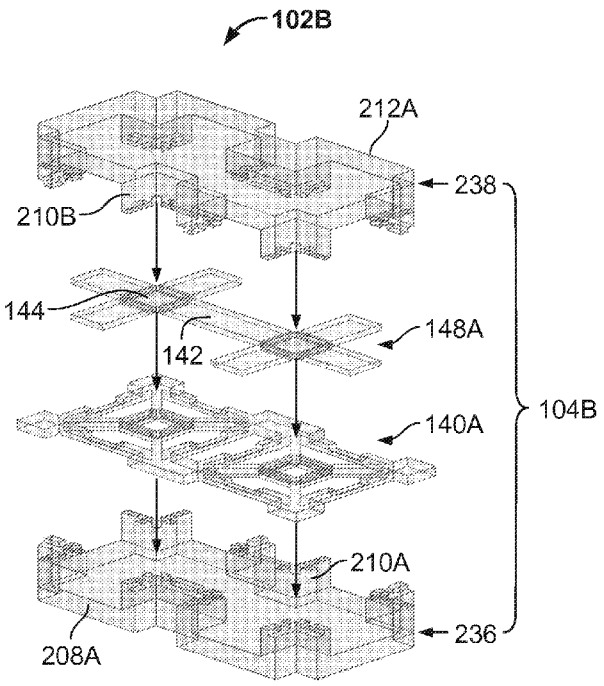


FIG. 11A

(57) Abstract: In some aspects, a quantum computing system includes an electromagnetic waveguide system. The waveguide system has an interior surface that defines an interior volume of intersecting waveguides. Qubit devices are housed in the waveguide system. In some cases, the intersecting waveguides each define a cutoff frequency, and the qubit devices have qubit operating frequencies below the cutoff frequency. In some cases, coupler devices are housed in the waveguide system; each coupler device is configured to selectively couple a pair of neighboring qubit devices based on control signals received from a control source.

WO 2015/178990 A3

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— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

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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)
G06N 99/00; H01L 39/02; G06J 1/00; G02B 6/12; G01R 33/44; G02F 1/01

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean utility models and applications for utility models
Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords: quantum computing system, multi-dimensional array, qubit device, electromagnetic waveguide lattice, qubit operating freqency, cutoff frequency, quantum processor cell, coupler device, and similar terms.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2008-0162613 A1 (MOHAMMAD H.S. AMIN) 03 July 2008 See paragraphs [0042]-[0045], [0069]-[0072]; and figures 2, 6.	122,126-127
Y		123,129-130,132-134
A		1-121,124-125,128,131
Y	US 2012-0326720 A1 (JAY M. GAMBETTA et al.) 27 December 2012 See paragraph [0031]; claim 1; and figure 1.	123,129-130,132-134
A	US 2013-0005580 A1 (PAUL BUNYK et al.) 03 January 2013 See paragraphs [0033]-[0074]; and figures 1A-2B.	1-134
A	US 2005-0078902 A1 (RAYMOND G. BEAUSOLEIL et al.) 14 April 2005 See paragraphs [0020]-[0029], [0035]-[0047]; and figures 2A-2C, 4A-4B.	1-134
A	ANDREW J KERMAN, `Quantum information processing using quasiclassical electromagnetic interactions between qubits and electrical resonators`, New Journal of Physics, 06 December 2013, Vol. 15 (URL: http://iopscience.iop.org/article/10.1088/1367-2630/15/12/123011/meta;esessionid=BED8E9AD129C9F6BAF830342F59ECAA1.c1.iopscience.cld.iop.org) See pages 1-24.	1-134

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance
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INTERNATIONAL SEARCH REPORT

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