



(51) International Patent Classification:  
G06N 10/00 (2019.01)

(21) International Application Number:  
PCT/EP2021/067861

(22) International Filing Date:  
29 June 2021 (29.06.2021)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
16/917,056 30 June 2020 (30.06.2020) US

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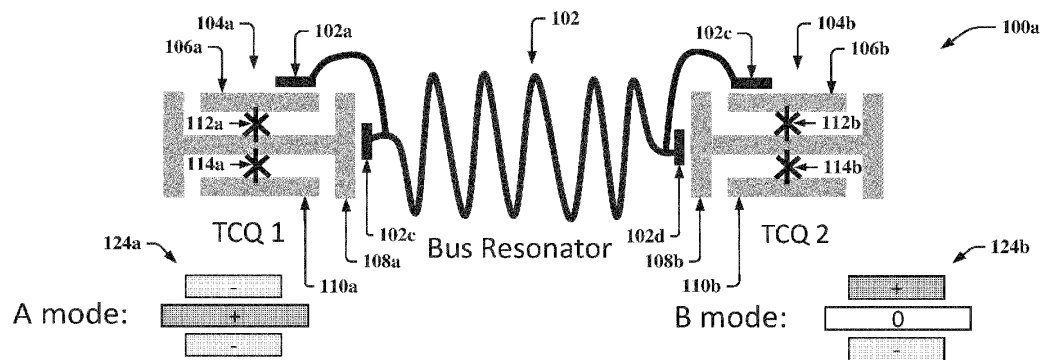
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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, 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, GH,

(54) Title: QUANTUM DEVICE FACILITATING SUPPRESSION OF ZZ INTERACTIONS BETWEEN TWO-JUNCTION SUPERCONDUCTING QUBITS



**FIG. 1A**

(57) Abstract: Devices and/or computer-implemented methods facilitating static ZZ suppression and Purcell loss reduction using mode-selective coupling in two-junction superconducting qubits are provided. In an embodiment, a device can comprise a superconducting bus resonator. The device can further comprise a first superconducting qubit. The device can further comprise a second superconducting qubit, the first superconducting qubit and the second superconducting qubit respectively comprising: a first superconducting pad; a second superconducting pad; a third superconducting pad; a first Josephson Junction coupled to the first superconducting pad and the second superconducting pad; and a second Josephson Junction coupled to the second superconducting pad and the third superconducting pad. The first superconducting pad and the second superconducting pad of the first superconducting qubit and the second superconducting qubit are coupled to the superconducting bus resonator. The superconducting bus resonator entangles the first superconducting qubit and the second superconducting qubit based on receiving a control signal.

GM, KE, LR, LS, MW, MZ, NA, RW, 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, 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).

**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))*
- *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*