Design, characterization and optimization of novel superconducting qubit circuits

Project Name My plan (FWO DMP) - Design, characterization and optimization of novel superconducting qubit circuits

Project Identifier 1S15722N

Principal Investigator / Researcher Jacques Van Damme

Institution KU Leuven

1. General Information

Name applicant

Jacques Van Damme

FWO Project Number & Title

research project 1S15722N

Design, characterization and optimization of novel superconducting qubit circuits.

Affiliation

- KU Leuven

2. Data description

Will you generate/collect new data and/or make use of existing data?

- Generate new data

Describe in detail the origin, type and format of the data (per dataset) and its (estimated) volume. This may be easiest in a table (see example) or as a data flow and per WP or objective of the project. If you reuse existing data, specify the source of these data. Distinguish data types (the kind of content) from data formats (the technical format).

Type of data	Format	Volume	How created
electronic signal traces	.csv .p .mat	5-10 GB	Device measurements using measurement equipment like VNA, DAQ, AWG, oscilloscope

3. Legal and ethical issues

Will you use personal data? If so, shortly describe the kind of personal data you will use. Add the reference to your file in KU Leuven's Register of Data Processing for Research and Public Service Purposes (PRET application). Be aware that registering the fact that you process personal data is a legal obligation.

- No

Privacy Registry Reference:

Short description of the kind of personal data that will be used:

Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? If so, add the reference to the formal approval by the relevant ethical review committee(s)

- No

Does your work possibly result in research data with potential for tech transfer and valorisation? Will IP restrictions be claimed for the data you created? If so, for what data and which restrictions will be asserted?

- No

Do existing 3rd party agreements restrict dissemination or exploitation of the data

you (re)use? If so, to what data do they relate and what restrictions are in place?

- No

4. Documentation and metadata

What documentation will be provided to enable reuse of the data collected/generated in this project?

I am using an open source python package (qcodes) to collect all my measurements into a structured database. All the machine settings are saved alonside the data traces.

Additionally I take lab notes use onenote to describe the experimental context for the data I measure.

Will a metadata standard be used? If so, describe in detail which standard will be used. If no, state in detail which metadata will be created to make the data easy/easier to find and reuse.

- Yes

The python package I use to construct a database saves meta data automatically.

5. Data storage and backup during the FWO project

Where will the data be stored?

The data is stored on the lab computer, regular backups are made onto a network drive shared with the research group. Copies can be made and kept on personal devices.

How is backup of the data provided?

The data is stored on IMEC's network with automatic back-up procedures in place.

Is there currently sufficient storage & backup capacity during the project? If yes, specify concisely. If no or insufficient storage or backup capacities are available then explain how this will be taken care of.

- Yes

Our research group currently has 500 GB storage place allocated on the IMEC servers for measurement data, with options of expansion when necessary.

What are the expected costs for data storage and back up during the project? How will these costs be covered?

My project fits within the IMEC quantum computing efforts, I can use the data storage and back-up system of the team. IMEC covers the costs.

Data security: how will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?

I am not working with sensitive data. The data is stored on a secured network folder, only accessible by members of the research group. Data can only be written to the data-base, it is impossible to temper with it.

6. Data preservation after the FWO project

Which data will be retained for the expected 5 year period after the end of the project? In case only a selection of the data can/will be preserved, clearly state the reasons for this (legal or contractual restrictions, physical preservation issues, ...).

It is possible for the data of my project to be retained for at least a 5 year period after the end of my project. IMEC will retain my data, and I will make the necessary local copies for data that is the basis of scientific publications.

Where will the data be archived (= stored for the longer term)?

The data will be stored on IMEC's central servers.

What are the expected costs for data preservation during the retention period of 5 years? How will the costs be covered?

The database at IMEC is already in place and available for use without extra cost. IMEC covers all the expenses and support.

7. Data sharing and reuse

Are there any factors restricting or preventing the sharing of (some of) the data (e.g. as defined in an agreement with a 3rd party, legal restrictions)?

- No

Some of the data I collect is part of IMEC's quantum computing program and cannot be shared with third parties without IMEC's permission.

Which data will be made available after the end of the project?

Data belonging to scientific publications will be publically available upon request.

Where/how will the data be made available for reuse?

- Upon request by mail

When will the data be made available?

- Upon publication of the research results

Who will be able to access the data and under what conditions?

The published data will be accessible by IMEC and accessible by anyone upon request, proved that the appropriate credit is given to the creators.

What are the expected costs for data sharing? How will the costs be covered?

There are no expected costs for data sharing.

8. Responsibilities

Who will be responsible for data documentation & metadata?

I am responsible for data documentation and metadata

Who will be responsible for data storage & back up during the project?

I am responsible for data storage and back up during the project.

Who will be responsible for ensuring data preservation and reuse ?

I am responsible for ensuring data preservation and reuse.

Who bears the end responsibility for updating & implementing this DMP?

The PI bears the end responsibility of updating & implementing this DMP.