

CLAIMS

1. A system, comprising:
 - a memory that stores computer executable components; and
 - a processor that executes the following computer executable components stored in the memory, wherein the computer executable components comprise:
 - a receiving component that receives a quantum program for performing a quantum task, wherein the quantum program includes a first program and a second program;
 - an adaptive compiling component that compiles the first program;
 - an executing component that executes the compiled first program;
 - a second receiving component that receives an output based on executing the compiled first program;
 - a second adaptive compiling component that compiles the second program based on the received output from executing the first program; and
 - a second executing component that executes the compiled second program.
2. The system according to the preceding claim, further comprising a determining component, wherein the determining component employs one or more circuit outputs that are applied to one or more circuit inputs.
3. The system according to any of the preceding claims, wherein the first program is defined based on the previously generated one or more outputs from the first program.
4. The system according to any of the preceding claims, wherein the second program is defined based on the previously received one or more outputs from the second program.
5. The system according to any of the preceding claims, wherein the receiving component recompiles the compiled first program into a first recompiled program adapted to execute on a first quantum hardware device.
6. The system according to the preceding claim, wherein receiving the first output is

based on executing the recompiled first program.

7. The system according to any of the two preceding claims, wherein recompiling the compiled first program into a second recompiled program is adapted to execute on a second quantum hardware device.

8. The system according to the preceding claim, wherein receiving a second output is based on executing the recompiled second program.

9. The system according to any of the preceding claims, wherein compiling the second program is based on selecting either the received first or the received second output.

10. A computer-implemented method, comprising:
receiving, by the system operatively coupled to a quantum program for performing a quantum task, wherein the quantum program includes a first program and a second program;
compiling, by the system, the first program;
executing, by the system, the compiled first program;
receiving, by the system, an output based on executing the compiled first program;
compiling, by the system, the second program based on the received output from executing the first program; and
executing, by the system, the compiled second program.

11. The computer implemented method according to the preceding claim, further comprising:
determining, by the system, one or more circuit outputs that are applied to one or more circuit inputs.

12. The computer implemented method according to any of the preceding claims 10 to 11, further comprising:

employing, by the system, the first program which is defined based on the previously generated one or more outputs from the first program.

13. The computer implemented method according to any of the preceding claims 10 to 12, further comprising:

employing, by the system, the second program which is defined based on the previously received one or more outputs from the second program.

14. The computer implemented method according to any of the preceding claims 10 to 13, further comprising:

recompiling, by the system, the compiled first program into a first recompiled program adapted to execute on a first quantum hardware device.

15. The computer implemented method according to the preceding claim, further comprising:

receiving, by the system, the first output based on executing the recompiled first program.

16. The computer implemented method according to any of the preceding claims 10 to 15, further comprising:

recompiling, by the system, the compiled first program into a second recompiled program adapted to execute on a second quantum hardware device.

17. The computer implemented method according to the preceding claim, further comprising:

receiving, by the system, the second output based on executing the recompiled second program.

18. The computer implemented method according to any of the preceding claims 10 to 17, further comprising:

compiling, by the system, the second program based on selecting either the received first or the received second output.

19. A computer program product facilitating a quantum adaptive execution of quantum circuits, the computer program product comprising a computer readable storage medium having program instructions embodied therewith, the program instructions executable by a processor to cause the processor to:

- receive, by the processor, a quantum program for performing a quantum task,
- wherein the quantum program includes a first program and a second program;
- compile, by the processor, the first program;
- execute, by the processor, the compiled first program;
- receive, by the processor, an output based on executing the compiled first program;
- compile, by the processor, the second program based on the received output from executing the first program; and
- execute, by the processor, the compiled second program.

20. The computer program product according to the preceding claim, wherein the program instructions are further executable by the processor to cause the processor to:

- determine, by the processor, one or more circuit outputs that are applied to one or more circuit inputs.

21. The computer program product according to any of the two preceding claims, wherein the program instructions are further executable by the processor to cause the processor to:

- employ, by the processor, the first program which is defined based on the previously generated one or more outputs from the first program.

22. The computer program product according to any of the three preceding claims, wherein the program instructions are further executable by the processor to cause the processor to:

- employ, by the processor, the second program which is defined based on the previously received one or more outputs from the second program.

23. The computer program product according to any of the four preceding claims, wherein the program instructions are further executable by the processor to cause the processor to:

recompile, by the processor, the compiled first program into a first recompiled program adapted to execute on a first quantum hardware device.

24. The computer program product according to the preceding claim, wherein the program instructions are further executable by the processor to cause the processor to:

receive, by the processor, the first output based on executing the recompiled first program.

25. The computer program product according to any of the preceding claims 19 to 24, wherein the program instructions are further executable by the processor to cause the processor to:

recompile, by the processor, the compiled first program into a second recompiled program adapted to execute on a second quantum hardware device.