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A quantum circuit modeling toolkit for high performance computing

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**Abstract content (Max 300 words)
Formatting &
Special chars**

Theoretically, quantum computers are known to solve a certain class of problems more efficiently than their classical counterparts. This is due to parallelism which is inherent in quantum algorithms. However, a full-scale quantum computer has not been realized as yet. Therefore, in order to validate and debug quantum circuits, a classical computer is used. Since most of these circuits are simulated using personal computers (PCs), quantum circuits with a limited number of quantum bits (qubits) can only be simulated, due to computational limitations of PCs. In this work, we report the simulation of quantum circuits on a high performance platform using message passing interface for the Python (mpi4py) package.

**Apply to be
 considered for a student
 award (Yes / No)?**

Yes

**Level for award
 (Hons, MSc,
 PhD)?**

PhD

**Main supervisor (name and email)
and his / her institution**

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**Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?**

Yes

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