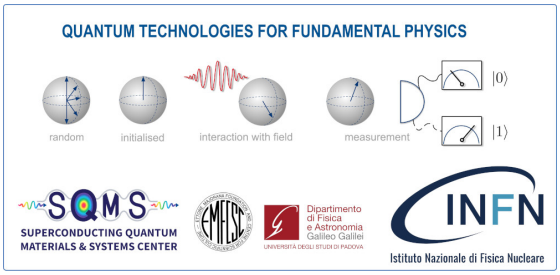

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Cryogenic test runs in preparation for NLQM searches

Tuesday, 5 September 2023 09:50 (25 minutes)

"Following the ideas in [1] and [2] we are building an experiment for searching for the quantum mechanics non-linearity signal
at the cryogenic cavity vertical test facility at Fermlab. The experiment will employ quantum bit sequence generated
on "Aspen-M"80-qubit quantum computer at Rigetti Computing, Inc [3]. The novelty of this experiment lies in using cryogenic temperature setup which would
allow to suppress background noise. The experiment will be run in an automated way by a computer that communicates with the several devices needed in the experiment.
The experimenter's involvement in running the experiment is only launching the execution of the script the runs the experiment in an automated way from start to end.
This was approach was chosen to avoid a problem of quantum dilution [1]. So far a test run was run was conducted using classically generated bits rather then quantumly generated.
Details of the test run will be described.
[1] https://arxiv.org/pdf/2106.10576.pdf
[2] arXiv:2204.11875 (2022)
[3] https://www.rigetti.com/"

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