



Canadian Association
of Physicists

Association canadienne
des physiciens et physiciennes

Contribution ID: 3591 Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

(G*) Benchmarking of Universal Qutrit Gates

Wednesday 21 June 2023 11:00 (15 minutes)

We develop an approach for the characterization of universal qutrit gates which extends Clifford Randomized Benchmarking (RB). Our extension uses group theoretical and data recovery methods similar to RB. We show that our approach is both feasible and efficient, and compatible with current experimental methods. This extended RB scheme is valuable for three communities. For experimentalists, it provides a reliable method for verifying the correct functioning of their universal qutrit gate set. For RB researchers, it allows the application of well-established techniques in characterizing universal gates, placing our method at the forefront of the field. Additionally, group theory specialists can appreciate the practical application of group theory in the context of RB.

Keyword-1

quantum information

Keyword-2

quantum benchmarking

Keyword-3

mathematical physics

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Session Classification: (DTP) W1-5 Quantum Theory | Théorie quantique (DPT)

Track Classification: Technical Sessions / Sessions techniques: Theoretical Physics / Physique théorique (DTP-DPT)