

The International Research Training Group “Imaging of Quantum Systems”

cordially invites you to a guest lecture by



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entitled

Group functions in filtered randomized
benchmarking for passive bosonic devices

The lecture will take place
on Friday, 17 July 2026, at 11:00 a. m.
in SR 143 (Albert-Einstein-Straße 23)

Abstract:

We reduce the cost of a recent bosonic randomized benchmarking protocol for passive transformations [1]. Our approach introduces a filter function constructed from group functions of the unitary group, namely matrix entries of its irreducible representations. This construction avoids the need to compute Clebsch–Gordan coefficients [2]. The resulting filter is compatible with the same data used in the original permanent-based scheme, while enabling a different data-collection procedure that requires only a single measurement setting. We further argue that weak coherent states and intensity measurements are sufficient to perform the characterization. These results may simplify the benchmarking of bosonic platforms that do not have photon-number-resolving detectors and reduce the data-analysis overhead required for characterization.

[1] Mirko Arienzo, Dmitry Grinko, Martin Kliesch, Markus Heinrich, arXiv:2408.11111

[2] DAA arXiv:2511.00842