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Discrimination and Certification of Random Quantum Operations

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This talk explores recent progress in distinguishing and certifying random quantum operations and measurements. We discuss key results from three studies:

1. establishing bounds on the success probability of distinguishing unknown quantum operations,
2. local certification of unitary quantum channels with optimal strategies, and
3. discrimination of von Neumann measurements with and without classical descriptions.

These findings contribute to the development of robust quantum technologies by improving our understanding of the fundamental limits of quantum discrimination and certification.

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