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Adaptive characterization of coherent states[1] MARKKU P.V. STENBERG, KEVIN PACK, FRANK K. WILHELM, Theoretical Physics, Saarland University, 66123 Saarbrucken, Germany — We present a method for efficient characterization of an optical coherent state $|\alpha\rangle$. We choose measurement setups adaptively based on the data while it is collected. Our algorithm divides the estimation in three different steps with different measurement strategies: (i) Searching a crude estimate, (ii) rapidly improving the accuracy, and (iii) the phase where the improvement of the accuracy slows down due to the quantum nature of the coherent state. Our algorithm significantly outperforms nonadaptive schemes. While our standard strategy is robust against measurement errors we also present strategies optimized for the presence of such errors.

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