

Quantum metrology - almost perfect theoretical framework with just a few cracks

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Recent theoretical developments have rendered quantum metrology a mature field, where some of the most fundamental questions have been answered and efficient computational tools developed. We have now a full understanding of quantum metrological potential in case of noisy single parameter estimation models, provided the noise may be assumed to be Markovian. Nevertheless, non-Markovian models remain challenging and efficient universal theoretical tools are still missing. Apart from that, multi-parameter estimation scenarios may pose a challenge even in the Markovian regime, not to mention non-Markovian one. Do not despair, though, some progress is being made...

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