



## Interferometric visibility and coherence

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**Abstract:** Recently, the basic concept of quantum coherence (or superposition) has gained a lot of renewed attention, after Baumgratz et al. [PRL 113:140401 (2014)], following Aberg [arXiv:quant-ph/0612146] and Braun/Georgeot [PRA 73:022314 (2006)], have proposed a resource theoretic approach to quantify it. This has resulted in a large number of papers and preprints exploring various coherence monotones, and debating possible forms for the resource theory. Here we take the view that the operational foundation of coherence in a state, be it quantum or otherwise wave mechanical, lies in the observation of interference effects. Our approach here is to consider an idealised multi-path interferometer, with a suitable detector, in such a way that the visibility of the interference pattern provides a quantitative expression of the amount of coherence in a given probe state. We present a general framework of deriving coherence measures from visibility, and demonstrate it by analysing several concrete visibility parameters, recovering some known coherence measures and obtaining some new ones.

(Based on arXiv:1701.05051 with T. Biswas and M. Garcia Diaz. Published in: Proc. Roy. Soc. London A, vol. 473, no. 2203, 20170170 (2017))

