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## **About the use of fidelity to assess quantum resources**

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Fidelity is a figure of merit commonly used in quantum information processing in order to quantify similarity between quantum states and, in turn, to assess reconstruction techniques for quantum states and operations. Fidelity is a quantity bounded to the interval  $[0,1]$  and this may induce a psychological trap: a fidelity level above, say, 0.9 or 0.99 is, in fact, usually considered as a piece of evidence for the two signals to be nearly the same. Here, on the basis of several examples for single and two - mode continuous variable systems, as well as for qubit systems, we show that "very high" level of fidelity may be achieved by pair of states with considerably different physical properties. We conclude that fidelity as a measure of similarity of quantum states should be used with more cautions than current habits.