

## *Optics Journal: Editorial*

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### On reality

Much has been written about reality recently. As an experimental physicist I define reality simply as a set of measurements. Each measurement is a glimpse into reality and the average of a series of measurements, plus or minus its error, an expression of reality.

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First, as a physicist one must always be open to possibilities and accept the doubts brought about by our limited perception. However, one must also ask for the experimental evidence. So far there is no published experimental evidence that there is more than one universe. In his book Deutsch (1997) uses single photon interference to introduce a conceptual justification of a parallel universe. However, his description of single photon interference is unnecessary given the Dirac description of interference (Dirac, 1947) and recent explanations of this description (Duarte, 1998). In essence, single-photon interference can be described considering the large coherence length of the single photon that allows it to illuminate two or many slits simultaneously. Then, it is the probability amplitudes, interacting according to the mechanics of Dirac that gives rise to a measurable interferometric distribution (Duarte, 1993, 2003, 2004).