

Superresolution in Time and Frequency

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Accurate time is at the core of many modern technologies. I will present new schemes that allow one to achieve the ultimate quantum precision for the estimation of the time (or frequency) offset of an incoherent mixture of ultrashort pulses at the single-photon level. Amazingly, these techniques are able to resolve temporal separations 10 times smaller than the pulse duration, as well as imbalanced intensities differing by a factor of 100. This represents an improvement of more than an order of magnitude over the best standard methods based on intensity detection and pave the way for new technologies in this field.