



QUADRATURE SAMPLING FOR NARROW-BAND SIGNALS

Innovative process and instrument used to improve the reconstruction of irregularly sampled narrow-band signal

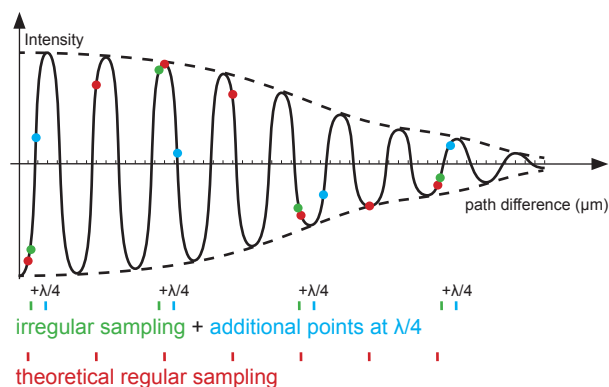
Technological benefits

High-performance technology

Clear improvement in the S/N ratio compared to current methods
Reduction in the number of mirror facets needed for interferometers
Compact system

Innovative resampling

Noise amplification minimized when resampling the measured signal
Fewer acquisition points needed for resampling



Sampling principle

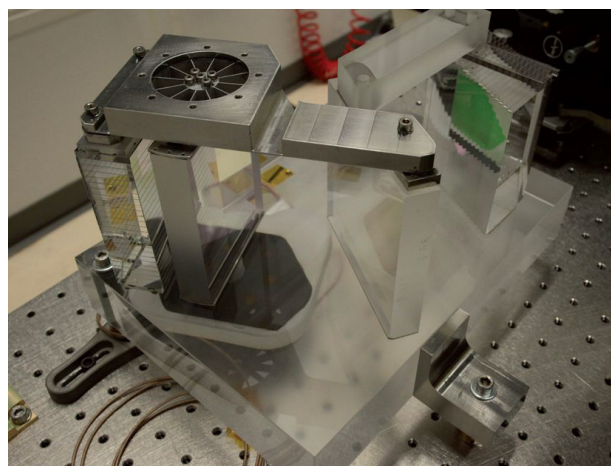
Invention overview

Perfectly reconstructs an irregularly-sampled signal without amplifying noise or increasing the number of sampling points with respect to Shannon's theorem.

The operating principle lies in taking just one of every two points of the irregular sampling then adding a point at $+\lambda/4$.

Two methods are applicable to interferometry:

- Thin-film coating on each mirror (or facet)
- Variation in the path difference by moving an element of the interferometer



Experimental device

Potential applications

Applicable to all narrow-band signals with irregular sampling

Static Fourier transform spectrometers, remote sensing, telecom applications

Commercial benefits

Smaller calculation workload

Fewer samples to process
Simpler calculations

Optimal result

Little noise amplification

Patented invention, available under licence