The bispectrum of a third order stationary random process defined as

where is the 2D Fourier transform.

The complex bicepstrum of the random process is

The linear bispectrum is defined if the complex bicepstrum exists as

where is the projection of the complex bicepstrum on the axes,

Maybe should be

Difference between the bispectrum and the linear bispectrum constitutes the modelling error introduced by fitting a linear model to a nonlinear process. To quantify this error, decompose the complex bicepstrum into two additive factors,

where

This allows the bispectrum to be factored into two components, one factor being the linear part and the other being the nonlinear part,

where

For a wide-sense stationary linear process, so

where is constant. The complex bicepstrum is the inverse 2D Fourier transform of the complex logarithm of the bispectrum,

Applying properties of logarithms and Fourier transforms,

The 2D-IFT of the constant term results in an impulse at the origin, the 2D-IFTs of and are zero everywhere except the and axes respectively and the 2D-IFT of is zero everywhere except for the line .