

Spectral coherence & polarization anomalies

Singular optics is concerned with the behavior of electromagnetic fields in close proximity to the regions of perfect destructive interference where field amplitudes vanish and, by implication, phases are indeterminate (singular). Recently, singular optics concepts have been extended to fluctuating (statistical) optical fields generated by statistical (noisy) sources. Such fields can only be described in terms of the appropriate correlation functions. TOP has demonstrated that in the neighborhood of respective phase singularities, the **normalized second-order correlation functions** (spectral degrees of coherence) and the **spectral degrees of polarization** of statistical fields display anomalous spectral behaviors. An example is shown below:

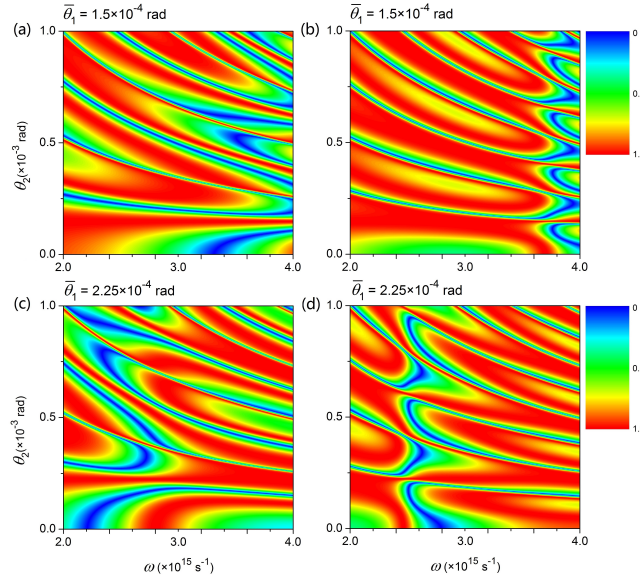


Fig. 1. Spectral coherence anomalies of polychromatic, partially spatially coherent fields.

References and links

1. L. Wang, F. Che, S. A. Ponomarenko, and Z. Z. Chen "Spectral coherence anomalies, *Opt. Lett.*, in press (2013).
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