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Application of correlation techniques to infrared imaging system optimization (Proceedings Paper)

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Date: **18 November 1999**

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[Proceedings Vol. 3904](#)

Fourth International Conference on Correlation Optics, [Oleg V. Angelsky](#), Editors, pp.301-310

Date: **18 November 1999**

Paper Abstract

The paper describes an approach to optimization of passive infrared imaging systems based on maximization of the correlation between output signals of an idealized imaging system and a real one. This approach guarantees the optimal balance between temperature and spatial resolutions of the imaging system for any given test object. The paper represents a mathematical apparatus that binds a coefficient of correlation between the output signals with parameters of an imaging system such as focal distance, aperture diameter, dimensions of photosensitive element and etc. This apparatus allows to evaluate the performance and to get a merit function for optimization. Results of optimization and problems of identification of the best relationships between spatial temperature and resolutions are discussed.

DOI: 10.1117/12.370417

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