Laser interferometer with fine-focused beam in a system of three coupled interferometers

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Abstract

The study analyzes a system of coupled interferometers — one measuring interferometer and two auxiliary interferometers built according to the Michelson scheme to monitor the spatial position (shape) of an object or the parameters of layered structures. The measuring interferometer functions based on the effect of matching the interfering fields and generates an interference focus coincidence pulse of the probe laser beam with the controlled surface. The auxiliary low-coherent interferometer forms a reference interference pulse, with respect to which the position of the measuring pulse in the path difference scale is determined. An auxiliary laser interferometer is used for this purpose. The study looks into the theory of interferometers, scheme solutions and computer signal processing algorithms. Experimental results are provided, the accuracy of measurements is analyzed.

Keywords: laser interferometry, fine-focused beam, spatial position (shape) of an object

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Access full text (in Russian)

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