AUTHOMATISATION OF DYNAMIC ELECTRONIC SPECKLE PATTERN INTERFEROMETRY MEASUREMENTS IN APPLICATION TO DEFECT DETECTION

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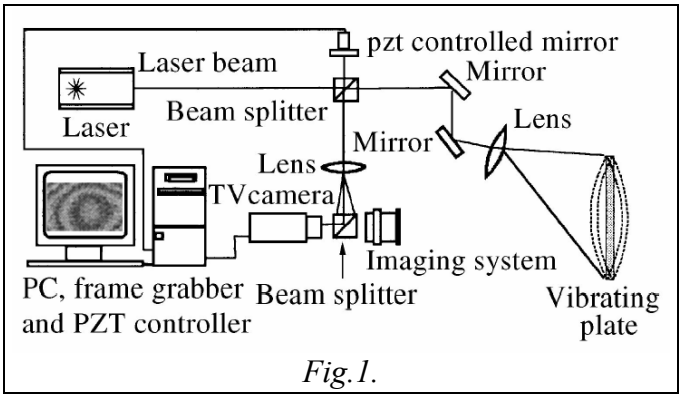

Fig.1.

The purpose of our work is the development of automatic defect detection for satellite panels in frameworks of Gamma-ray Large Area Space Telescope (GLAST) project. Automatic defect detection is a very urgent problem of techniques, because of its realization would liberate a lot of human works, and increase the accuracy of analysis. For solution of the problem we propose the application of a phase shift method of Electronic Speckle Pattern Interferometry (ESPI) [1] (fig. 1) with application of a new based on a direct Radon transformation [2-3] algorithm of an image analysis. Fig. 2 shows two typical results of the application of our method for the detection of a defect existence and its location. Its show a same sample contained one defect with two different frequency of vibration. Although in the initial images (α) are not clear, (β, γ) (demonstrated $\left(\max_{\phi}(\sigma_S) - \langle\sigma_S\rangle_{\phi}\right) \Big/ \langle\sigma_S\rangle_{\phi}$ in contour (β) and surface (γ) formats) show very similar and clear maximums in the defect location. Fig. 2 (δ) demonstrates $\phi((\sigma_s)_{\max})$, which give one more control value for a defect location.

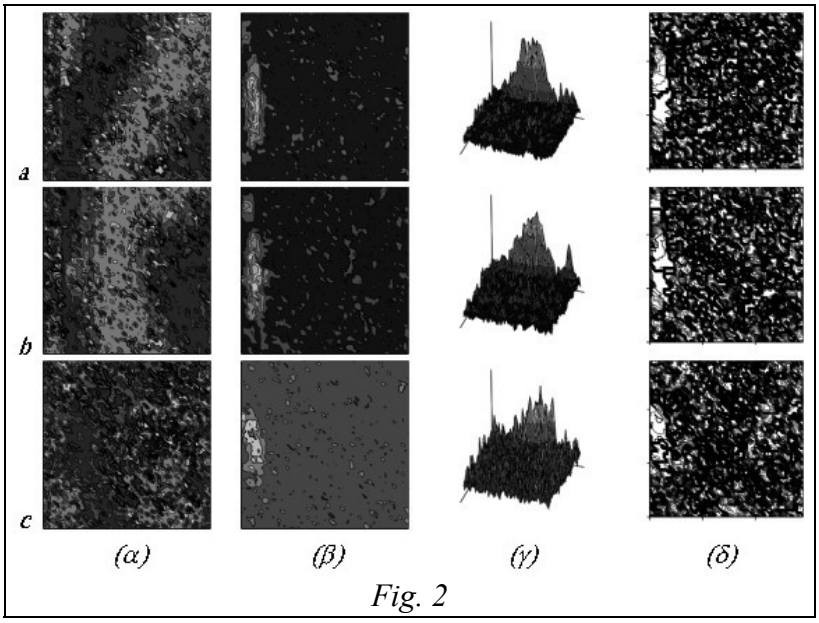

Fig. 2

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References

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