SM7S_11556

XXI International Congress of Theoretical and Applied Mechanics
Warsaw, Poland, August 15–21, 2004

The Whole Field Non-Destructive Optical Slicing Method in Three-Dimensional Photoelasticity

Michael N. Osipov, Vychislav K. Emelin

Samara State University, Samara, Russia

The whole field non-destructive optical slicing method in three-dimensional photoelasticity is based on the analysis of the scattered light field is presented. This method is based on the modification of the scattered light photoelasticity method. The thin optical slice of the photoelastic model is formed by two plane sheets of light emitted from the same laser beam. The two-dimensional scattered light field from the two plane sheets is analyzed by analyzer in the direction orthogonal to these plane sheets. For the determination of the stressed state in the thin optical slice is suggested analyse of the two-dimensional scattered light field from each plane sheets and theirs interference. The theoretical bases of this method and the boundary application are presented. Experimental optical arrangement with a C.C.D. camera is suggested to put this method in to practice.

View the extended summary