

Rapid evaluation of errors of contactless temperature and emissivity measurement by least square method

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This work is devoted to different approaches to errors evaluation. Three techniques of temperature and emissivity determination were applied: Wien's approximation, hybrid approximation, 2-dimensional solution. Two different methods of error evaluation are considered: application of Fisher's distribution to obtained parameters and covariance matrix followed by multiplication by Student's coefficient. Comparison was conducted. The optimal strategy is suggested. The approach is to apply Wien's approximation, pass the obtained T_0 and ε_0 parameters to initial assumed parameters of hybrid approximation. The result is obtained by hybrid approach T and ε parameters. Covariance matrix is preferred for error evaluation. Explanation of error curves form is proposed. Dependence of errors estimation on the window boundaries is revealed.