The work is devoted to condition monitoring and vibroacoustical diagnosis of the crack-like damages of the gas-turbine engines (GTE) blades at the steady-state and non-steady-state modes of GTE. The developed diagnostic model of GTE is presented and the influence of damage on the measured vibro- and acoustical signals at the steady-state and non-steady-state modes of GTE is determined. The application of the following signal processing methods: Polyspectral (Higher-Order Spectral) analysis, Wavelet-transformation and dimensionless characteristics of the vibroacoustical signals is proved. The efficiency of signal processing methods is demonstrated by the results of numerical simulations of the turbine stage at the steady-state and non-steadystate modes of vibration excitation. The fault features are detected and investigated.
Keywords: gas-turbine engine, crack-like damage, vibroacoustical diagnosis, signal processing

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