

1. Record Nr.	UNINA9910825299303321
Titolo	Definition of constants for piezoceramic materials [[electronic resource] /] / Vladimir A. Akopyan ... [et al.]
Pubbl/distr/stampa	New York, : Nova Science Publishers, c2010
ISBN	1-61324-331-6
Edizione	[1st ed.]
Descrizione fisica	1 online resource (219 p.)
Collana	Materials science and technologies series
Altri autori (Persone)	AkopyanVladimir A
Disciplina	620.1/404297
Soggetti	Piezoelectric ceramics Electronic ceramics Elasticity - Mathematical models Piezoelectricity - Mathematical models Piezoelectric devices
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Intro -- DEFINITION OF CONSTANTS FORPIEZOCERAMIC MATERIALS -- CONTENTS -- PREFACE -- INTRODUCTION -- BOUNDARY PROBLEMS FOR PIEZOELECTRICSAND MATHEMATICAL MODELSON ELECTRO-ELASTICITY -- 2.1. CONSTITUTIVE EQUATIONS OFELECTRO-ELASTIC MEDIA -- 2.2. ELECTRO-ELASTICITY PROBLEM ON LONGITUDINALOSCILLATIONS OF TRANSVERSE-POLARIZED BEAM -- 2.3. PROBLEM ON LONGITUDINAL OSCILLATIONS OFBEAM UNDER LONGITUDINAL ELECTRIC FIELD -- 2.4. PROBLEM ON SHEAR OSCILLATIONS EXCITED INPLATE WITH DEPTH POLARIZATION -- 2.5. PROBLEM ON PLANAR OSCILLATIONS INTHIN PLATE WITH DEPTH POLARIZATION.APPROXIMATE RELATIONS FOR ELASTIC CONSTANTS -- METHODS FOR DEFINITION OFPIEZOELECTRIC MATERIAL CONSTANTS -- 3.1. METHODS FOR DEFINITION OF ELASTICPIEZOELECTRIC CONSTANTS IN DYNAMIC REGIME -- 3.2. METHODS FOR DEFINITION OF PIEZOMODULES INSTATIC AND QUASISTATIC REGIMES -- IDENTIFICATION OF OSCILLATION MODESAND DETERMINATION OFFULL MATRIX OF THE COMPATIBLEPIEZOELECTRIC MATERIAL CONSTANTS -- 4.1. DIFFERENT OSCILLATION MODES FORPIEZOCERAMIC RECTANGULAR PRISMATIC BEAM -- 4.1.1. Isolated Longitudinal and Depth Oscillation

Modes for Transverse-Polarized Beam and Experimental Definition
their Resonances -- 4.1.2. Theoretical Analysis of Amplitude-Frequency
Characteristics and Oscillation Forms for Transverse-Polarized Beam.
Comparison of Theoretical and Test Data -- 4.2. METHOD AND
ALGORITHM FOR DEFINITION OF FULL MATRIX OF THE PIEZOCERAMIC
MATERIAL COMPATIBLE CONSTANTS AND MEASURING DEVICE FOR THEIR
REALIZATION -- 4.2.1. Method and Algorithm for Definition of Full
Matrix of the Constants -- 4.2.2. Measuring Device Used for Definition
of Constants -- 4.2.3. Results of Measurements and Calculations for
Some Piezoceramics. Comparative Analysis with Known Data --
DEFINITION OF PIEZOMODULE D33 -- 5.1. GOVERNING EQUATIONS FOR
DEFINITION OF PIEZOMODULE D33 AND SCHEME ITS CALCULATION.
5.2. METHOD AND DEVICE FOR DEFINITION OF PIEZOMODULE D33 IN
QUASISTATIC REGIME -- 5.3. ANALYSIS OF RESULT VALIDITY
AND ERROR IN MEASUREMENT OF D33 -- DEFINITION OF ELASTIC
CONSTANTS FOR PIEZOCERAMICS AND THEIR
TEMPERATURE CHARACTERISTICS BY USING METHOD OF BENDING-
TORSION OSCILLATIONS OF THE CANTILEVER BEAM -- 6.1. Problem of
Bending Oscillations of Piezoceramic Cantilever Beam with Additive
Mass -- 6.2. METHOD FOR DEFINITION OF TECHNICAL ELASTIC
CONSTANTS -- 6.3. INVESTIGATION OF TEMPERATURE DEPENDENCIES
OF PIEZOCERAMIC ELASTIC CONSTANTS -- 6.4. ANALYSIS OF RESULT
VALIDITY AND ERROR IN MEASUREMENT OF ELASTIC CONSTANTS --
APPENDIX A. SPECIALIZED FINITE-ELEMENT COMPLEX ACELAN -- A.1.
CONTINUUM AND FINITE-ELEMENT MODELS OF PIEZOELECTRIC DEVICES
-- A.1.1. Continuum Models of Elastic, Electroelastic and Acoustic Media
-- A.1.2. Finite-Element Models -- A.1.3. Numerical Solution of System
of the Ordinary Differential Equations for the Finite-Element Model -- A.
2. TECHNIQUE OF SOLUTION OF THE DYNAMIC PROBLEMS IN ACELAN --
A.2.1. Construction of Finite-Element Model in ACELAN -- A.2.2.
Definition of Natural Frequencies of Resonance and Antiresonance -- A.
2.3. Solution of Problem on Steady Oscillations -- A.2.4. Solution of
Non-stationary Problem -- REFERENCES -- INDEX.
