1. Record Nr. UNINA9910350340203321 Autore Sharma Pankaj Titolo Vibration Analysis of Functionally Graded Piezoelectric Actuators [[electronic resource] /] / by Pankaj Sharma Singapore:,: Springer Singapore:,: Imprint: Springer,, 2019 Pubbl/distr/stampa **ISBN** 981-13-3717-9 Descrizione fisica 1 online resource (81 pages) Collana SpringerBriefs in Computational Mechanics, , 2191-5342 Disciplina 621.3815 Surfaces (Physics) Soggetti Vibration Characterization and Evaluation of Materials Materials Engineering Vibration, Dynamical Systems, Control Numerical and Computational Physics, Simulation Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia 1. Overview -- 2. Fundamentals of Piezoceramics -- 3. Basics of FGM Nota di contenuto and FGPM -- 4. Fundamentals of DQ Method -- 5. Vibration Analysis of FGPM Beam -- 6. Vibration Analysis of FGPM annular plate -- 7. Summary and Conclusions. Sommario/riassunto This book presents a detailed study on the vibration analysis of functionally graded piezoelectric actuators excited under the shear effect. Two types of actuator geometries viz. beam and annular plate are considered, where the material properties are assumed to have a continuous variation in accordance with a power law distribution. The generalized differential quadrature method is used to obtain the solutions, and is compared to exact analytical results. The methodology reported and the numerical results presented will be useful for the design of devices utilizing functionally graded piezoelectric actuators under the influence of shear. .