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Descrizione fisica	1 online resource (X, 369 p. 289 illus., 208 illus. in color.)
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Soggetti	Buildings - Design and construction Multibody systems Vibration Mechanics, Applied Aerospace engineering Astronautics Building Construction and Design Multibody Systems and Mechanical Vibrations Aerospace Technology and Astronautics
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Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Preface -- Introduction to structural vibration control technologies -- Origination, development and applications of particle damping technologies -- Theoretical analysis and numerical simulation of particle impact dampers -- Performance analysis of particle dampers attached to single-degree-of-freedom (SDOF) structures -- Performance analysis of particle dampers attached to multi-degree-of-freedom (MDOF) structures -- Shaking table test study on particle damping technologies -- Wind tunnel test study on particle damping technologies -- Optimization design of impact dampers and particle dampers -- Semi-active control particle damping technologies -- References.
Sommario/riassunto	This book presents a systematic introduction to particle damping technologies, which can be used to effectively mitigate seismic-induced and wind-induced vibration in various structures. Further, it offers

comprehensive information on the latest research advances, e.g. a refined simulation model based on the discrete element method and a simplified simulation model based on equivalent principles. It then intensively studies the vibration attenuation effects of particle dampers subjected to different dynamic loads; in this context, the book proposes a new damping mechanism and “global’’ measures that can be used to evaluate damping performance. Moreover, the book uses the shaking table test and wind tunnel test to verify the proposed simulation methods, and their satisfactory damping performance is confirmed. To facilitate the practical engineering application of this technology, optimization design guidelines for particle impact dampers are also provided. In closing, the bookoffers a preliminary exploration of semi-active particle damping technology, which holds great potential for extension to other applications in which the primary system is subjected to non-stationary excitations.