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Nota di contenuto	Cover; Contents; Preface; 1 Introduction; 1.1 Background and Review; 1.2 Fundamentals of Passive-damper Installation; 1.2.1 Viscous Dampers; 1.2.2 Visco-elastic Dampers; 1.3 Organization of This Book; References; 2 Optimality Criteria-based Design: Single Criterion in Terms of Transfer Function; 2.1 Introduction; 2.2 Incremental Inverse Problem: Simple Example; 2.3 Incremental Inverse Problem: General Formulation; 2.4 Numerical Examples I; 2.4.1 Viscous Damping Model; 2.4.2 Hysteretic Damping Model; 2.4.3 Six-DOF Models with Various Possibilities of Damper Placement 2.5 Optimality Criteria-based Design of Dampers: Simple Example 2.5.1 Optimality Criteria; 2.5.2 Solution Algorithm; 2.6 Optimality Criteria-based Design of Dampers: General Formulation; 2.7 Numerical Examples II; 2.7.1 Example 1: Model with a Uniform Distribution of Story Stiffnesses; 2.7.2 Example 2: Model with a Uniform Distribution of Amplitudes of Transfer Functions; 2.8 Comparison with Other Methods; 2.8.1 Method of Lopez Garcia; 2.8.2 Method of Trombetti and Silvestri;

2.9 Summary; Appendix 2.A; References

3 Optimality Criteria-based Design: Multiple Criteria in Terms of Seismic Responses  
3.1 Introduction; 3.2 Illustrative Example; 3.3 General Problem; 3.4 Optimality Criteria; 3.5 Solution Algorithm; 3.6 Numerical Examples; 3.6.1 Multicriteria Plot; 3.7 Summary; References;

4 Optimal Sensitivity-based Design of Dampers in Moment-resisting Frames; 4.1 Introduction; 4.2 Viscous-type Modeling of Damper Systems; 4.3 Problem of Optimal Damper Placement and Optimality Criteria (Viscous-type Modeling); 4.3.1 Optimality Criteria; 4.4 Solution Algorithm (Viscous-type Modeling)

4.5 Numerical Examples I (Viscous-type Modeling) 4.6 Maxwell-type Modeling of Damper Systems; 4.6.1 Modeling of a Main Frame; 4.6.2 Modeling of a Damper-Support-member System; 4.6.3 Effects of Support-Member Stiffnesses on Performance of Dampers; 4.7 Problem of Optimal Damper Placement and Optimality Criteria (Maxwell-type Modeling); 4.7.1 Optimality Criteria; 4.8 Solution Algorithm (Maxwell-type Modeling); 4.9 Numerical Examples II (Maxwell-type Modeling); 4.10 Nonmonotonic Sensitivity Case; 4.11 Summary; Appendix 4.A; References

5 Optimal Sensitivity-based Design of Dampers in Three-dimensional Buildings  
5.1 Introduction; 5.2 Problem of Optimal Damper Placement; 5.2.1 Modeling of Structure; 5.2.2 Mass, Stiffness, and Damping Matrices; 5.2.3 Relation of Element-end Displacements with Displacements at Center of Mass; 5.2.4 Relation of Forces at Center of Mass due to Stiffness Element  $K(i, j)$  with Element-end Forces; 5.2.5 Relation of Element-end Forces with Element-end Displacements; 5.2.6 Relation of Forces at Center of Mass due to Stiffness Element  $K(i, j)$  with Displacements at Center of Mass  
5.2.7 Equations of Motion and Transfer Function Amplitude

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Sommario/riassunto

The recent introduction of active and passive structural control methods has given structural designers powerful tools for performance-based design. However, structural engineers often lack the tools for the optimal selection and placement of such systems. In *Building Control with Passive Dampers*, Takewaki brings together most the reliable, state-of-the-art methods in practice around the world, arming readers with a real sense of how to address optimal selection and placement of passive control systems. The first book on optimal design, sizing, and location

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