

1. Record Nr.	UNISALENTO991002949479707536
Autore	Shchepakina, Elena
Titolo	Singular perturbations : introduction to system order reduction methods with applications / by Elena Shchepakina, Vladimir Sobolev, Michael P. Mortell
Pubbl/distr/stampa	Cham [Switzerland] : Springer, c2014
ISBN	9783319095691
Descrizione fisica	XIII, 212 p. : 50 ill. ; 24 cm
Collana	Lecture notes in mathematics, 0075-8434 ; 2114
Classificazione	AMS 34-02 AMS 34C45 AMS 34E15 AMS 34E17 LC QA372
Altri autori (Persone)	Sobolev, Vladimirauthor Mortell, Michael P.
Disciplina	515.352
Soggetti	Differentiable dynamical systems Differential equations Engineering mathematics Engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction ; Slow Integral Manifolds ; The Book of Numbers ; Representations of Slow Integral Manifolds ; Singular Singularly Perturbed Systems ; Reduction Methods for Chemical Systems ; Specific Cases ; Canards and Black Swans ; Appendix: Proofs
Sommario/riassunto	These lecture notes provide a fresh approach to investigating singularly perturbed systems using asymptotic and geometrical techniques. It gives many examples and step-by-step techniques, which will help beginners move to a more advanced level. Singularly perturbed systems appear naturally in the modelling of many processes that are characterized by slow and fast motions simultaneously, for example, in fluid dynamics and nonlinear mechanics. This book's approach consists in separating out the slow motions of the system under investigation. The result is a reduced differential system of lesser order. However, it

inherits the essential elements of the qualitative behaviour of the original system. Singular Perturbations differs from other literature on the subject due to its methods and wide range of applications. It is a valuable reference for specialists in the areas of applied mathematics, engineering, physics, biology, as well as advanced undergraduates for the earlier parts of the book, and graduate students for the later chapters

---