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Titolo	Reduced Kinetic Mechanisms and Asymptotic Approximations for Methane-Air Flames [[electronic resource]] : A Topical Volume / / edited by Mitchell D. Smooke
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Nota di contenuto	Formulation of the premixed and nonpremixed test problems -- Premixed and nonpremixed test problem results -- Reducing mechanisms -- Overview of asymptotics for methane flames -- On reduced mechanisms for methane-air combustion -- Structure of the oxidation layer for stoichiometric and lean methane-air flames -- Asymptotic analysis of methane-air diffusion flames -- Sensitivity analysis of laminar premixed CH4-air flames using full and reduced kinetic mechanisms -- Application of reduced chemical mechanisms for prediction of turbulent nonpremixed methane jet flames -- Conventional asymptotics and computational singular perturbation for simplified kinetics modelling.
Sommario/riassunto	In this comprehensive text a systematic numerical and analytical treatment of the procedures for reducing complicated systems to a simplified reaction mechanism is presented. The results of applying the

reduced reaction mechanism to a one-dimensional laminar flame are discussed. A set of premixed and non-premixed methane-air flames with simplified transport and skeletal chemistry are employed as test problems that are used later on to evaluate the results and assumptions in reduced reaction networks. The first four chapters form a short tutorial on the procedures used in formulating the test problems and in reducing reaction mechanisms by applying steady-state and partial-equilibrium approximations. The final six chapters discuss various aspects of the reduced chemistry problem for premixed and nonpremixed combustion.