

COMPUTATIONAL MODELING OF MULTIPHASE GEOMATERIALS

FUSAO OKA
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Computational Modeling Of Multiphase Geomaterials

Michael Seilmaier



Computational Modeling Of Multiphase Geomaterials:

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Kimoto, 2021-11-21 Numerical methods are very powerful tools for use in geotechnical engineering particularly in computational geotechnics Interest is strong in the new field of multi phase nature of geomaterials and the area of computational geotechnics is expanding Alongside their companion volume Computational Modeling of Multiphase Geomaterials CRC Press 2012 Fusao Oka and Sayuri Kimoto cover recent progress in several key areas such as air water soil mixture cyclic constitutive models anisotropic models noncoaxial models gradient models compaction bands a form of volumetric strain localization and strain localization under dynamic conditions and the instability of unsaturated soils The text also includes applications of computational modeling to large scale excavation of ground liquefaction analysis of levees during earthquakes methane hydrate development and the characteristics of contamination using bentonite The erosion of embankments due to seepage flow is also presented Bifurcation and Degradation of Geomaterials with Engineering Applications Euripides Papamichos, Panos Papanastasiou, Elena Pasternak, Arcady Dyskin, 2017-04-21 This book contains the scientific contributions to the 11th International Workshop on Bifurcation and Degradation in Geomaterials IWBDG held in Limassol Cyprus May 21 25 2017 The IWBDG series have grown in size and scope since their inception 30 years ago in Germany covering more and wider areas of geomaterials and geomechanics research including modern trends The papers cover a wide range of topics including advances in instabilities localized and diffuse failure micromechanical multiscale phenomena multiphysics modeling and other related topics This volume gathers a series of manuscript by brilliant international scholars who work on modern recent advances in experimental theoretical and numerical methods The theoretical and applied mechanics are linked successfully with engineering applications in traditional and in emerging fields such as geomechanics for the energy and the environment The quality of the contributed papers has benefited from the peer review process by expert referees This book can be used as a useful reference for research students academics and practicing engineers who are interested in the instability and degradation problems in geomaterials geomechanics geotechnical engineering and other related applications Bifurcation and Degradation of Geomaterials in the New Millennium Kam-Tim Chau, Jidong Zhao, 2014-12-29 This book contains contributions to the 10th International Workshop on Bifurcation and Degradation in Geomaterials held in Hong Kong May 28 30 2014 This event marks the silver Jubilee anniversary of an international conference series dedicated to the research on localization instability degradation and failure of geomaterials since 1988 when its first workshop was organized in Germany This volume of book collects the latest progresses and state of the art research from top researchers around the world and covers topics including multiscale modeling experimental characterization and theoretical analysis of various instability and degradation phenomena in geomaterials as well as their relevance to contemporary issues in engineering practice This book can be used as a useful reference for research students academics and practicing engineers who are interested in the instability and degradation problems in geomechanics and geotechnical engineering *Geotechnical Fundamentals for Addressing New World*

Challenges Ning Lu, James K. Mitchell, 2019-05-24 This single volume thoroughly summarizes advances in the past several decades and emerging challenges in fundamental research in geotechnical engineering These fundamental research frontiers are critically reviewed and described in details in lights of four grand challenges our society faces climate adaptation urban sustainability energy and material resources and global water resources The specific areas critically reviewed carefully examined and envisioned are sensing and measurement soil properties and their physics roots multiscale and multiphysics processes in soil geochemical processes for resilient and sustainable geosystems biological processes in geotechnics unsaturated soil mechanics coupled flow processes in soil thermal processes in geotechnical engineering and rock mechanics in the 21st century *Computational Modelling of Concrete Structures* Gunther Meschke, René de Borst, Herbert Mang, Nenad Bicanic, 2020-11-25 This conference proceedings brings together the work of researchers and practising engineers concerned with computational modelling of complex concrete reinforced concrete and prestressed concrete structures in engineering practice The subjects considered include computational mechanics of concrete and other cementitious materials including masonry Advanced discretisation methods and microstructural aspects within multi field and multi scale settings are discussed as well as modelling formulations and constitutive modelling frameworks and novel experimental programmes The conference also considered the need for reliable high quality analysis and design of concrete structures in regard to safety critical structures with a view to adopting these in codes of practice or recommendations The book is of special interest to researchers in computational mechanics and industry experts in complex nonlinear simulations of concrete structures **Poromechanics III - Biot Centennial (1905-2005)** Younane N. Abousleiman, Alexander H.-D. Cheung, Franz-Josef Ulm, 2005-05-01 These proceedings represent the latest advances in the mechanics of porous materials known as poromechanics The porous materials considered are solids containing voids that are impregnated with fluid The focus is on the mechanical interactions of the inhomogeneous solid with the single or multi phase fluid under the loading of mechanical force fluid pressure thermal chemical and magnetic fields The response time can be in static diffusional and dynamic ranges The length scale can start from nano to micro macro and up to field scales Its application covers many branches of science and engineering including geophysics geomechanics composite materials biomechanics acoustics seismicity civil mechanical environmental and petroleum engineering The approaches taken include analytical computational and experimental To honor the pioneering contributions of Maurice A Biot 1905 1985 to poromechanics the Biot Conference on Poromechanics was convened for the first time in Louvain la Neuve Belgium in 1998 The success of the first conference led to the 2nd Biot Conference held in Grenoble France in 2002 To celebrate the centennial birthday of Biot May 25 2005 the 3rd Biot Conference on Poromechanics was held at the University of Oklahoma Norman Oklahoma U S A on May 24 27 2005

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