

Pdf free Modern global seismology (Download Only)

Foundations of Modern Global Seismology Modern Global Seismology Theoretical Global Seismology Active Global Seismology Seismic Tomography Arrays and Array Methods in Global Seismology The Seismic Wavefield: Volume 2, Interpretation of Seismograms on Regional and Global Scales International Handbook of Earthquake & Engineering Seismology Multiscale Seismic Tomography Introduction to Seismology Summaries of Technical Reports Active Global Seismology Theoretical and Observational Studies in Global Seismology Seismic Tomography Polar Seismology Earthquake Data in Engineering Seismology GNSS Atmospheric Seismology The Earth's Inner Core History of Seismograms and Earthquakes of the World Seismic Ambient Noise Global Seismicity Dynamics and Data-Driven Science The Seismic Analysis Code International Handbook of Earthquake and Engineering Seismology International Seismological Summary Principles of Seismology Imaging, Modeling and Assimilation in Seismology Extraterrestrial Seismology Open-file Report International Handbook of Earthquake & Engineering Seismology, Part B Advances in Seismic Event Location Treatise on Geophysics: Seismology and structure of the Earth Continental Earthquakes Progresses in European Earthquake Engineering and Seismology Earthquake and Disaster Risk: Decade Retrospective of the Wenchuan Earthquake Computational Seismology Individual Studies by Participants ... Observatory Seismology Ionospheric Precursors of Earthquakes International Handbook of Earthquake & Engineering Seismology Introduction to Volcanic Seismology

Foundations of Modern Global Seismology

2020-10-13

modern global seismology second edition is a complete self contained primer on seismology featuring extensive coverage of all related aspects from observational data through prediction and emphasizing the fundamental theories and physics governing seismic waves both natural and anthropogenic based on thoroughly class tested material the text provides a unique perspective on earth s large scale internal structure and dynamic processes particularly earthquake sources and the application of theory to the dynamic processes of the earth s upper layer this insightful new edition is designed for accessibility and comprehension for graduate students entering the field exploration seismologists will also find it an invaluable resource on topics such as elastic wave propagation seismic instrumentation and seismogram analysis includes more than 400 illustrations from both recent and traditional research articles to help readers visualize mathematical relationships as well as boxed features to explain advanced topics offers incisive treatments of seismic waves waveform evaluation and modeling and seismotectonics as well as quantitative treatments of earthquake source mechanics and numerous examples of modern broadband seismic recordings covers current seismic instruments and networks and demonstrates modern waveform inversion methods includes extensive updated references for further reading new to this edition features reorganized chapters split into two sections beginning with introductory content such as tectonics and seismogram analysis and moving on to more advanced topics including seismic wave excitation and propagation multivariable and vector calculus and tensor approaches completely updated references and figures to bring the text up to date includes all new sections on recent advancements and to enhance examples and understanding split into shorter chapters to allow more flexibility for instructors and easier access for researchers and includes exercises

Modern Global Seismology

1995-05-18

intended as an introduction to the field modern global seismology is a complete self contained primer on seismology it features extensive coverage of all related aspects from observational data through prediction emphasizing the fundamental theories and physics governing seismic waves both natural and anthropogenic based on thoroughly class tested material the text provides a unique perspective on the earths large scale internal structure and dynamic processes particularly earthquake sources and on the application of theory to the dynamic processes of the earths upper skin authored by two experts in the field of geophysics this insightful text is designed for the first year graduate course in seismology exploration seismologists will also find it an invaluable resource on topics such as elastic wave propagation seismic instrumentation and seismogram analysis useful in interpreting their high resolution images of structure for oil and mineral resource exploration more than 400 illustrations many from recent research articles help readers visualize mathematical relationships 49 boxed features explain advanced topics provides readers with the most in depth presentation of earthquake physics available contains incisive treatments of seismic waves waveform evaluation and modeling and seismotectonics provides quantitative treatment of earthquake source mechanics contains numerous examples of modern broadband seismic recordings fully covers current seismic instruments and networks demonstrates modern waveform inversion methods includes extensive references for further reading

Theoretical Global Seismology

2020-08-04

after every major earthquake the earth rings like a bell for several days these free oscillations of the earth and the related propagating body and surface waves are routinely detected at broad band seismographic stations around the world in this book f a dahlen and jeroen tromp present an advanced theoretical treatment of global seismology describing the normal mode body wave and surface wave methods employed in the determination of the earth s three dimensional internal structure and the source mechanisms of earthquakes the authors provide a survey of both the history of global seismological research and the major theoretical and observational advances made in the past decade the book is divided into three parts in the first foundations dahlen and tromp give an extensive introduction to continuum mechanics and discuss the representation of seismic sources and the free oscillations of a completely general earth model the resulting theory should provide the basis for future scientific discussions of the elastic gravitational deformation of the earth the second part the spherical earth is devoted to the free oscillations of a spherically symmetric earth in the third part the aspherical earth the authors discuss methods of dealing with the earth s three dimensional heterogeneity the book is concerned primarily with the forward problem of global seismology detailing how synthetic seismograms and spectra may be calculated and interpreted as a long needed unification of theories in global seismology the book will be important to graduate students and to professional seismologists geodynamicists and geomagnetists as well as to astronomers who study the free oscillations of the sun and other stars

Active Global Seismology

2017-04-03

neotectonics involves the study of the motions and deformations of the earth s crust that are current or recent in geologic time the mediterranean region is one of the most important regions for neotectonics and related natural hazards this volume focuses on the neotectonics of the eastern mediterranean region which has experienced many major extensive earthquakes including the devastating izmit turkey earthquake on august 17 1999 the event lasted for 37 seconds killing around 17 000 people injuring 44 000 people and leaving approximately half a million people homeless since then several north american european and turkish research groups have studied the neotectonics and earthquake potential of the region using different geological and geophysical methods including gps studies geodesy and passive source seismology some results from their studies were presented in major north american and european geological meetings this volume highlights the work involving the eastern mediterranean region which has one of the world s longest and best studied active strike slip horizontal motion faults the east west trending north anatolian fault zone which is very similar to the san andreas fault in california this volume features discussions of widespread applications in measuring plate motion that have strong implications in predicting natural disasters like earthquakes both on a regional and a global scale recent motions particularly those produced by earthquakes that provide insights on the physics of earthquake recurrence the growth of mountains orogenic movements and seismic hazards unique methodical approaches in collecting tectonophysical data including field seismic experimental computer based and theoretical approaches active global seismology is a valuable resource for geoscientists particularly in the field of tectonophysics geophysics geodynamics seismology structural geology environmental geology and geoengineering read an interview with the editors to find out more eos org editors vox neotectonics and earthquake forecasting

Seismic Tomography

2012-12-06

in recent years the increased availability and fidelity of broadband seismic instruments have effectively narrowed the gap between exploration and global seismic applications global seismologists are now able to take advantage of high resolution often exploration based tools to examine rock properties tens to hundreds of kilometers below surface this book reviews the key assumptions algorithms and prospects of several important array based methods in today s global and regional seismic surveys a short list of topics includes data migration pp and ss precursors radon transform mantle triplication p to s and s to p converted waves shear wave splitting high resolution seismic tomography and ambient noise interferometry each approach is presented in a cookbook fashion for easy comparison implementation and critique by the general readership

Arrays and Array Methods in Global Seismology

2014-10-30

guide to understanding of seismograms for graduate students researchers professionals in academia and petroleum industry

The Seismic Wavefield: Volume 2, Interpretation of Seismograms on Regional and Global Scales

2001

modern scientific investigations of earthquakes began in the 1880s and the international association of seismology was organized in 1901 to promote collaboration of scientists and engineers in studying earthquakes the international handbook of earthquake and engineering seismology under the auspices of the international association of seismology and physics of the earth s interior iaspei was prepared by leading experts under a distinguished international advisory board and team of editors the content is organized into 56 chapters and includes over 430 figures 24 of which are in color this large format comprehensive reference summarizes well established facts reviews relevant theories surveys useful methods and techniques and documents and archives basic seismic data it will be the authoritative reference for scientists and engineers and a quick and handy reference for seismologists also available is the international handbook of earthquake and engineering seismology part b two cd roms containing additional material packaged with the text

International Handbook of Earthquake & Engineering Seismology

2002-09-27

this book on multiscale seismic tomography written by one of the leaders in the field is suitable for undergraduate and graduate students researchers and professionals in earth and planetary sciences who need to broaden their horizons about seismotectonics volcanism and interior structure and dynamics of the earth and moon it describes the state of the art in seismic tomography with emphasis on the new findings obtained by applying tomographic methods in local regional and global scales for understanding the generating mechanism of large and great earthquakes such as the 2011 tohoku oki earthquake mw 9.0 crustal and upper mantle structure origin of active arc

volcanoes and intraplate volcanoes including hotspots heterogeneous structure of subduction zones fate of subducting slabs origin of mantle plumes mantle convection and deep earth dynamics the first lunar tomography and its implications for the mechanism of deep moonquakes and lunar evolution are also introduced

Multiscale Seismic Tomography

2015-02-20

this book provides an approachable and concise introduction to seismic theory designed as a first course for undergraduate students it clearly explains the fundamental concepts emphasizing intuitive understanding over lengthy derivations incorporating over 30 new material this second edition includes all the topics needed for a one semester course in seismology additional material has been added throughout including numerical methods 3 d ray tracing earthquake location attenuation normal modes and receiver functions the chapter on earthquakes and source theory has been extensively revised and enlarged and now includes details on non double couple sources earthquake scaling radiated energy and finite slip inversions each chapter includes worked problems and detailed exercises that give students the opportunity to apply the techniques they have learned to compute results of interest and to illustrate the earth s seismic properties computer subroutines and datasets for use in the exercises are available at cambridge.org/shearer

Introduction to Seismology

2009-06-11

neotectonics involves the study of the motions and deformations of the earth s crust that are current or recent in geologic time the mediterranean region is one of the most important regions for neotectonics and related natural hazards this volume focuses on the neotectonics of the eastern mediterranean region which has experienced many major extensive earthquakes including the devastating izmit turkey earthquake on august 17 1999 the event lasted for 37 seconds killing around 17 000 people injuring 44 000 people and leaving approximately half a million people homeless since then several north american european and turkish research groups have studied the neotectonics and earthquake potential of the region using different geological and geophysical methods including gps studies geodesy and passive source seismology some results from their studies were presented in major north american and european geological meetings this volume highlights the work involving the eastern mediterranean region which has one of the world s longest and best studied active strike slip horizontal motion faults the east west trending north anatolian fault zone which is very similar to the san andreas fault in california this volume features discussions of widespread applications in measuring plate motion that have strong implications in predicting natural disasters like earthquakes both on a regional and a global scale recent motions particularly those produced by earthquakes that provide insights on the physics of earthquake recurrence the growth of mountains orogenic movements and seismic hazards unique methodical approaches in collecting tectonophysical data including field seismic experimental computer based and theoretical approaches active global seismology is a valuable resource for geoscientists particularly in the field of tectonophysics geophysics geodynamics seismology structural geology environmental geology and geoengineering read an interview with the editors to find out more eos.org editors vox neotectonics and earthquake forecasting

Summaries of Technical Reports

1978

this book provides a systematic review of tomographic applications in seismology and the future directions theories and case histories are discussed by the international authors drawing on their own practical experiences with global and local case histories

Active Global Seismology

2017-03-03

seismology in polar regions arctic and antarctic allows us to study the static condition and high latitude dynamics of the earth this book covers the recent developments in seismology in polar regions observations and networks international collaboration heterogeneous structure and dynamics of the lithosphere deep earth s interiors observed from high latitudes characteristics of seismicity and seismic wave propagation and global tectonics in terms of earth s history including the interdisciplinary studies on the interaction between earth s spheres since the international polar year ipy in 2007 2008 was the most exciting campaign launched within contemporary polar studies this book observes recent seismological achievements by the ipy specifically focusing on the seismic signals near the surface associated with cryosphere dynamics and evolution topics on cryoseismology such as glacial earthquake activities are viewed in terms of global warming moreover observational experiments and long term monitoring under the extreme conditions in the polar environment are also discussed

Theoretical and Observational Studies in Global Seismology

2002

this book addresses current activities in strong motion networks around the globe covering issues related to designing maintaining and disseminating information from these arrays the book is divided into three principal sections the first section includes recent developments in regional and global ground motion predictive models it presents discussions on the similarities and differences of ground motion estimations from these models and their application to design spectra as well as other novel procedures for predicting engineering parameters in seismic regions with sparse data the second section introduces topics about the particular methodologies being implemented in the recently established global and regional strong motion databanks in europe to maintain and disseminate the archived accelerometric data the final section describes major strong motion arrays around the world and their historical developments the last three chapters of this section introduce projects carried out within the context of arrays deployed for seismic risk studies in metropolitan areas audience this timely book will be of particular interest for researchers who use accelerometric data extensively to conduct studies in earthquake engineering and engineering seismology

Seismic Tomography

1993-05-31

gnss can detect the seismic atmospheric ionospheric variations which can be used to investigate the seismo atmospheric disturbance characteristics and provide insights on the earthquake this book presents the theory methods results and modeling of gnss atmospheric seismology sesimo tropospheric anomalies pre co post seismic ionospheric disturbances epicenter estimation tsunami

and volcano ionospheric disturbances and volcanic plumes detection with gnss will be presented and discussed per chapter in the book

Polar Seismology

2018-10-10

the first comprehensive review of past and contemporary research on the earth's inner core from a seismological perspective providing a detailed account of how seismology is used in inner core research and suggesting avenues for further study it is an essential resource for researchers and students studying seismology and deep earth processes

Earthquake Data in Engineering Seismology

2011-01-03

key features historical seisograms are extremely important in establishing a long term database and in supplementing more recent information obtained by global seismic networks the papers presented here address a wide range of historical earthquake research and discuss earthquake data from around the world which has until now remained largely inaccessible topics include importance of historical seismograms for geophysical research historical seismograms and interpretation of strong earthquakes application of modern techniques to analysis of historical earthquakes

GNSS Atmospheric Seismology

2019-05-30

a comprehensive overview of seismic ambient noise covering observations physical origins modelling processing methods and applications in imaging and monitoring

The Earth's Inner Core

2017-02-02

the recent explosion of global and regional seismicity data in the world requires new methods of investigation of microseismicity and development of their modelling to understand the nature of whole earth mechanics in this book the author proposes a powerful tool to reveal the characteristic features of global and regional microseismicity big data accumulated in the databases of the world the method proposed in this monograph is based on 1 transformation of stored big data to seismicity density data archives 2 linear transformation of microseismicity density data matrixes to correlated seismicity matrixes by means of the singular value decomposition method 3 time series analyses of globally and regionally correlated seismicity rates and 4 the minimal non linear equations approximation of their correlated seismicity rate dynamics minimal non linear modelling is the manifestation for strongly correlated seismicity time series controlled by langevin type stochastic dynamic equations involving deterministic terms and random gaussian noises a deterministic term is composed minimally with correlated seismicity rate vectors of a linear term and of a term with a third exponent thus the dynamics of correlated seismicity in the world contains linearly changing stable nodes and rapid transitions between them with transient states this book contains discussions of future possibilities of stochastic extrapolations of global and regional seismicity in order to reduce earthquake disasters worldwide the dataset files are available online and can be downloaded at springer.com

History of Seismograms and Earthquakes of the World

1988-01-28

the first comprehensive guide to sac complete with introductory materials and detailed descriptions of its most advanced features

Seismic Ambient Noise

2019-03-21

modern scientific investigations of earthquakes began in the 1880s and the international association of seismology was organized in 1901 to promote collaboration of scientists and engineers in studying earthquakes the international handbook of earthquake and engineering seismology under the auspices of the international association of seismology and physics of the earth s interior iaspei was prepared by leading experts under a distinguished international advisory board and team of editors the content is organized into 56 chapters and includes over 430 figures 24 of which are in color this reference is accompanied by a cd rom containing historical and scientific information about earth motion a global earthquake database and an extensive database of seismicity

Global Seismicity Dynamics and Data-Driven Science

2020-10-07

this book first published in 2000 is an introductory text on seismology for upper division undergraduates and graduate students

The Seismic Analysis Code

2013-09-19

this work presents current approaches in geophysical research of earthquakes a global authorship from top institutions presents case studies to model measure and monitor earthquakes among others a full 3d waveform tomography method is introduced as well as propagator methods for modeling and imaging in particular the earthquake prediction method makes this book a must read for researchers in the field

International Handbook of Earthquake and Engineering Seismology

2002-01-01

taking a transdisciplinary approach to seismology this unique book reviews the most recent developments in planetary seismology helioseismology and asteroseismology

International Seismological Summary

1956

the two volume international handbook of earthquake and engineering seismology represents the

international association of seismology and physics of the earth's interior's iaspei ambition to provide a comprehensive overview of our present knowledge of earthquakes and seismology this state of the art work is the only reference to cover all aspects of seismology a resource library for civil and structural engineers geologists geophysicists and seismologists in academia and industry around the globe part b by more than 100 leading researchers from major institutions of science around the globe features 34 chapters detailing strong motion seismology earthquake engineering quake prediction and hazards mitigation as well as detailed reports from more than 40 nations also available is the international handbook of earthquake and engineering seismology part a authoritative articles by more than 100 leading scientists extensive glossary of terminology plus 2000 biographical sketches of notable seismologists

Principles of Seismology

1999

advances in seismic event location provides a broad overview of the fundamental issues involved in seismic event location and presents a variety of state of the art location methods and applications at a wide range of spatial scales three important themes in the book are seismic monitoring for a comprehensive nuclear test ban treaty ctbt seismic event location in three dimensional earth models and methods for multiple event location each chapter contains background material to help readers less familiar with the topics covered as well as to provide abundant references for readers interested in probing deeper into a topic however most of the emphasis is on recent advances in methodology and their application audience the book is intended primarily for academic and professional researchers and graduate students in seismology

Imaging, Modeling and Assimilation in Seismology

2012-02-22

the treatise on geophysics is the only comprehensive state of the art and integrated summary of the present state of geophysics offering an array of articles from some of the top scientists around the world this 11 volume work deals with all major parts of solid earth geophysics including a volume on the terrestrial planets and moons in our solar system this major reference work will aid researchers advanced undergrad and graduate students as well as professionals in cutting edge research

Extraterrestrial Seismology

2015-06-25

this book encompasses the most challenging topics in earthquake engineering and seismology aiming at seismic risk reduction and reveals the outstanding progresses made in europe in the past four years earthquakes pose a significant threat to countries around the world but equipped with the right knowledge and tools engineers and seismologists can support policy and decision makers and building officials in creating a safer future for all of us in this paradigm the third european conference on earthquake engineering and seismology 3ecee is organized in bucharest romania in september 2022 by the romanian association for earthquake engineering technical university of civil engineering of bucharest and national institute for earth physics this outstanding scientific event is the third in a series started in 2006 in geneva switzerland and continued in 2014 in istanbul turkey the papers included in this book are written by the most prominent contemporary european scholars in the two folded fields of 3ecee the distinguished nicholas ambraseys along with 28 invited lectures providing the best knowledge in the fields of earthquake engineering and seismology are

shared with the general readership of this book the book is organized in three parts as follows 1 seismicity engineering seismology and seismic hazard 2 seismic risk assessment and mitigation and 3 structural earthquake engineering the 29 contributed papers for this book are shared among these three parts almost equally chapter the challenge of the integrated seismic strengthening and environmental upgrading of existing buildings is available open access under a creative commons attribution 4 0 international license via link springer com

Open-file Report

1979

this book presents review papers and research articles focusing on the 2008 wenchuan earthquake in sichuan china discussing cross disciplinary and multiple thematic aspects of modern seismological geophysical geological and stochastic methodology and technology resulting from international and regional earthquake research and disaster mitigation collaborations and written by international authors from multiple institutions and disciplines it describes methods and techniques in earthquake science based on investigations of the wenchuan earthquake it also includes extensive reference lists to aid further research the book helps both senior researchers and graduate students in earthquake science to broaden their horizons in data analysis numerical modeling and structural retrieval for the tectonic geological geophysical and mechanical interpretation of the 2008 m8 wenchuan earthquake to support a global and regional cooperation for preparedness and the mitigation and management of seismic risk

International Handbook of Earthquake & Engineering Seismology, Part B

2003-07-23

an introductory text to a range of numerical methods used today to simulate time dependent processes in earth science physics engineering and many other fields it looks under the hood of current simulation technology and provides guidelines on what to look out for when carrying out sophisticated simulation tasks

Advances in Seismic Event Location

2013-11-11

the first effective seismographs were built between 1879 and 1890 in 1885 e s holden an astronomer and then president of the university of california instigated the purchase of the best available instruments of the time to keep a register of all earthquake shocks in order to be able to control the positions of astronomical instruments these seismographs were installed two years later at lick observatory on mt hamilton and at the berkeley campus of the university over the years those stations have been upgraded and joined by other seismographic stations administered at berkeley to become the oldest continuously operating stations in the western hemisphere the first hundred years of the seismographic stations of the university of california at berkeley years in which seismology has often assumed an unforeseen role in issues of societal and political importance ended in 1987 to celebrate the centennial a distinguished group of fellows staff and friends of the stations met on the berkeley campus in may 1987 the papers they presented are gathered in this book a distillation of the current state of the art in observatory seismology ranging through subjects of past present and future seismological interest they provide a benchmark reference for years to come the first

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Treatise on Geophysics: Seismology and structure of the Earth

2007

the book aims to explain the variations of near earth plasma observed over seismically active areas several days hours before strong seismic shocks it demonstrates how seismo ionospheric coupling is part of the global electric circuit and shows that the anomalous electric field appearing in active seismic areas is the main carrier of information from the earth into the ionosphere the discussion of physical mechanisms is based on experimental data the results can be regarded as the basis for future applications such as short term earthquake prediction it proceeds to describe existing complex systems of space born and ground based monitoring for electromagnetic and ionospheric precursors of earthquakes as well as those still under construction it is an excellent text for courses and contains a wealth of information for those scientists working in the field of natural disaster reduction

Continental Earthquakes

1993

modern scientific investigations of earthquakes began in the 1880s and the international association of seismology was organized in 1901 to promote collaboration of scientists and engineers in studying earthquakes the international handbook of earthquake and engineering seismology under the auspices of the international association of seismology and physics of the earth s interior iaspei was prepared by leading experts under a distinguished international advisory board and team of editors the content is organized into 56 chapters and includes over 430 figures 24 of which are in color this large format comprehensive reference summarizes well established facts reviews relevant theories surveys useful methods and techniques and documents and archives basic seismic data it will be the authoritative reference for scientists and engineers and a quick and handy reference for seismologists also available is the international handbook of earthquake and engineering seismology part b

Progresses in European Earthquake Engineering and

Seismology

2022-08-24

volcanic seismology represents the main and often the only tool to forecast volcanic eruptions and to monitor the eruption process this book describes the main types of seismic signals at volcanoes their nature and spatial and temporal distributions at different stages of eruptive activity following from the success of the first edition published in 2003 the second edition consists of 19 chapters including significant revision and five new chapters organized into four sections the book begins with an introduction to the history and topic of volcanic seismology discussing the theoretical and experimental models that were developed for the study of the origin of volcanic earthquakes the second section is devoted to the study of volcano tectonic earthquakes giving the theoretical basis for their occurrence and swarms as well as case stories of volcano tectonic activity associated with the eruptions at basaltic andesitic and dacitic volcanoes there were 40 cases of volcanic eruptions at 20 volcanoes that occurred all over the world from 1910 to 2005 which are discussed general regularities of volcano tectonic earthquake swarms their participation in the eruptive process their source properties and the hazard of strong volcano tectonic earthquakes are also described the third section describes the theoretical basis for the occurrence of eruption earthquakes together with the description of volcanic tremor the seismic signals associated with pyroclastic flows rockfalls and lahars and volcanic explosions long period and very long period seismic signals at volcanoes micro earthquake swarms and acoustic events the final section discuss the mitigation of volcanic hazard and include the methodology of seismic monitoring of volcanic activity the examples of forecasting of volcanic eruptions by seismic methods and the description of seismic activity in the regions of dormant volcanoes this book will be essential for students and practitioners of volcanic seismology to understand the essential elements of volcanic eruptions provides a comprehensive overview of seismic signals at different stages of volcano eruption discusses dozens of case histories from around the world to provide real world applications illustrations accompany detailed descriptions of volcano eruptions alongside the theories involved

Earthquake and Disaster Risk: Decade Retrospective of the Wenchuan Earthquake

2019-05-04

Computational Seismology

2017

Individual Studies by Participants ...

1986

Observatory Seismology

1989-01-01

Ionospheric Precursors of Earthquakes

2004-08-31

International Handbook of Earthquake & Engineering Seismology

2003

Introduction to Volcanic Seismology

2011-12-08

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