

2019 ROCK DYNAMICS SUMMIT

EDITED BY

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2019 ROCK DYNAMICS SUMMIT



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2019 Rock Dynamics Summit

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Preface

The 2019 Rock Dynamics Summit in Okinawa (abbreviated as 2019RDS) as a specialized conference of the International Society for Rock Mechanics and Rock Engineering (ISRM) is held in Bankoku Shinryokan on Busena Point in Nago, one of the most scenic spots in Okinawa (Japan), surrounded by the beautiful emerald ocean and clear blue sky and hosted 2000 Kyushu-Okinawa G-8 Summit.

The 2019 Rock Dynamic Summit in Okinawa is jointly organized by the Rock Dynamics Committee of Japan Society of Civil Engineers (JSCE-RDC) and Japan Society for Rock Mechanics (JSRM) and supported by the International Society for Rock Mechanics and Rock Engineering (ISRM) and Turkish National Society for Rock Mechanics (TNSRM).

Rock dynamics involves diverse research scopes ranging from earthquake engineering, blasting, impacts, failure of rock engineering structures as well as the occurrence and prediction of earthquakes, induced seismicity, rockbursts and non-destructive testing and explorations. Rock dynamics has wide applications in civil and infrastructural, resources and energy, geological and environmental engineering, geothermal energy, and earthquake hazard management. This topic has become one of the important area of research and engineering activities in Rock Mechanics and Rock Engineering. The 2019 Rock Dynamic Summit in Okinawa is organized to address scientific research as well as engineering applications.

There are 8 keynotes related to each theme of the summit by the eminent speakers involved in various aspects of Rock Dynamics. The abstract submission was open from April 18, 2018 till September 12, 2018. During this duration, 163 abstract were submitted and they were, at least, reviewed by two reviewers from the reviewing committee of the 2019RDS consisting of members from the organizing committee and international scientific and advisory committee of the 2019RDS. Finally, we have accepted 128 full-papers, which were also peer-reviewed by the reviewing committee. The 2019 Rock Dynamics Summit in Okinawa is hoped to be the representative forum of the science and engineering of Rock Dynamics and to be a milestone for the advance of Rock Mechanics and Rock Engineering.



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Introduction

Rock dynamics has become one of the most important topics in the field of rock mechanics and rock engineering. The spectrum of rock dynamics is very wide and it includes, the failure of rocks, rock masses and rock engineering structures such as rockbursting, spalling, popping, collapse, toppling, sliding, blasting, non-destructive testing, geophysical explorations, and, impacts.

The 2019RDS is held at the Bankoku Shinryokan in Okinawa between May 7 and 11, 2019 and it is devoted to topics on the dynamic behavior of rock and rock masses and scientific and engineering applications. The themes include:

- T1 Laboratory tests on Dynamic Responses of Rocks and Rock Masses; Fracturing of Rocks and Associated Strong Motions
- T2 Estimation Procedures and Numerical Techniques of Strong Motions Associated with the Rupture of Earth's Crust and Some Strong Motion
- T3 Dynamic Response and Stability of Rock Foundations, Underground Excavations in Rock, Rock Slopes
Dynamic Responses and Stability of Stone Masonry Historical Structures and Monuments
- T4 Induced Seismicity
- T5 Dynamic Simulation of Loading and Excavation
- T6 Blasting and machinery induced vibrations
- T7 Rockburst, Outburst, Impacts
- T8 Nondestructive Testing Using Shock Waves
- T9 Case Histories of Failure Phenomenon in Rock Engineering

This e-book include 128 full-papers related one or several themes listed above an they represent the state of art and current achievements on Rock dynamics. It is hoped that the 2019RDs would be a mile-stone in advancing the knowledge in this field and leading to the new techniques for experiments, analytical and numerical modelling as well as monitoring in dynamics of rocks and rock engineering structures.