Analysis diagram of rock drill structural characteristics

What is a structural analysis of a drill core?
The aim of any structural analysis of drill core should be to constrain the 3-D geometry and properties of ductile and/ or brittle structures and to develop an understanding of the deformation history in terms of timing and kinematics.

How to test a rock structural plane during drilling?
An in situ testing method suitable for the characteristics of the surrounding rock structural plane is proposed based on the response state of drilling parameters and equivalent compressive strength. This is combined with the identification model of the characteristics of the rock mass structural plane during drilling.

How a rock mass structural plane is identified during drilling?
This is combined with the identification model of the characteristics of the rock mass structural plane during drilling. The specific steps are as follows. In situ tests of the surrounding rock are carried out using the digital drilling test system.

How accurate is the identification model while drilling?
The identification model while drilling is verified to be correct due to the high identification accuracy. Based on this,a method for testing the characteristic parameters of the surrounding rock structural plane while drilling is proposed.

Do real-time drilling parameters reflect changes in rock strength?
The findings suggest that variations in these real-time drilling parameters during the rock drilling process can effectively reflect changes in rock strength.

How is rock breaking achieved in a drilling process?
1. During the drilling process, rock-breaking is primarily achieved through the vertical thrust of the drill rod advancing the drill bit and the torque applied in the horizontal direction rotating the bit.

Structural data is vital for the understanding of the geometry and evolution of a deposit and feeds into geologic, structural, resource, and geotechnical models. Accurate ...

While-drilling identification technology is a crucial part of intelligent mining development. The results provide a scientific basis for real-time adjustment of support ...

In order to study the mechanism of vibration characteristics of drill pipe under different rock properties, Abaqus mechanical analysis software was used to simulate the vibration response ...

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The theoretical reliability of the vibration response law of the drill pipe under different states has been further verified through drilling experiments of the anchoring system ...

Since many structural parameters influence the rock- breaking efficiency of the self- propelled swirling jet bit, the optimal values for the structural parameters can be determined by adjusting ...

Utilizing stress wave theory, a mathematical model for impact rock breaking is established, and the size of broken rock is estimated. Subsequently, the DEM-based ...

Down-the-hole hammer (hereafter DTH) drilling is an air hammer drilling technique designed for drilling through bedrock and features a typical drill string length of 200 m or shorter due to its ...

Based on the mechanisms of drilling and rock fragmentation, numerous researchers have examined the correlation between drilling feedback signals and the ...

Download scientific diagram | Drilling mechanism of three types of rock drill machines. (a) Top hammer drilling; (b) Down the hole drilling; (c) Rotary ...

The theoretical reliability of the vibration response law of the drill pipe under different states has been further verified through drilling ...

Ultra-deep oil and gas structure is the key field of exploration and development in the southern margin of Junggar Basin. In this area, the formation lithology is complex, the rock ...

Currently, there are no in-situ methods to quantify drilling-vibration response characteristics of different lithologies. Here, we quantified the vibration responses of four ...

Abstract - The oil exploration sector, blasting a hole on rocks and drilling hole on heat exchanger pumps is a challenging task for the engineers Hence engineers are using DTH drilling method ...

Download scientific diagram | Rock structure characteristics in different drilling depths. from publication: Computation and Analysis of High Rocky Slope ...

For the phenomenon of a hydraulic rock drill based on an underlapped reversing valve, the mechanical structure of the overlapped reversing form was ...

This paper presents a new drilling tool with multidirectional and controllable vibrations for enhancing the drilling rate of penetration and ...

Download scientific diagram | Drilling mechanism of three types of rock drill machines. (a) Top hammer

drilling; (b) Down the hole drilling; (c) Rotary drilling. from publication: Trend Analysis ...

In this research, the non-linear dynamics of the drill string system model, considering the influence of fluid--structure coupling and the effect of ...

In intact rock layers, variations in torque, thrust force, and drilling speed with depth remain relatively stable, in rock layer interfaces and fragmentation zones, sudden changes ...

In response to the issues of overheating of the shell and insufficient impact energy of the hydraulic rock drill, this paper focuses on the ...

Modifications and Equipment Adaptations Drilling in hard rock can generate significant vibrations and stress on equipment. Reinforced frames ...

Download scientific diagram | Structure chart of composite rock drill. from publication: Theoretical and Experimental Study of the Effects of Impact ...

The formation of a pressure relief zone is crucial for rockbust prevention during drilling pressure relief. This study investigates the mechanical behavior of high-stress rock ...

Download scientific diagram | The structure of the ultrasonic drill. from publication: An asteroid anchoring method based on cross-drilling geometric force closure ...

ABSTRACT: Based on the automatic mineral analysis technology of drill cuttings, the evaluation of rock mechanical parameters of drill cuttings in complex ultra-deep wells is carried out, a ...

Drill bit The structural characteristics and mining application analysis! 1. Application of rock drilling bit The drill bit plays an important role in both coal mining and tunnel construction, and is an ...

4. Conclusions The non-linear dynamic characteristics of a fluid-structure coupled drilling system are studied in this paper. The effects of forcing frequency ?, perturbation amplitude u, mass ...

The simulation results of flow field characteristics are in coincidence with the actual rock-drilling features. Therefore, the simulation ...

Rock mechanical properties play a crucial role in tunnel, mining, and petroleum engineering, and obtaining them conveniently is an urgent issue. In this study, a Rotary Drilling ...

Due to the short body and large span structure of the anchoring system crossbeam expansion frame, the vibration response of the drill pipe is significantly greater than that of the retracted ...

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In this publication we review the methods used in the struc- tural analysis of unoriented and oriented core and downhole televiewer surveys and summarize a variety of best practice ...

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