

# Author's Accepted Manuscript

The automatic interpretation of structural plane parameters in borehole camera images from drilling engineering

Chuanying Wang, Xianjian Zou, Zengqiang Han, Jinchao Wang, Yiteng Wang



www.elsevier.com/locate/petrol

PII: S0920-4105(17)30392-3  
DOI: <http://dx.doi.org/10.1016/j.petrol.2017.03.038>  
Reference: PETROL3926

To appear in: *Journal of Petroleum Science and Engineering*

Received date: 15 November 2015  
Revised date: 1 December 2016  
Accepted date: 19 March 2017

Cite this article as: Chuanying Wang, Xianjian Zou, Zengqiang Han, Jinchao Wang and Yiteng Wang, The automatic interpretation of structural plane parameters in borehole camera images from drilling engineering, *Journal of Petroleum Science and Engineering*, <http://dx.doi.org/10.1016/j.petrol.2017.03.038>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# The automatic interpretation of structural plane parameters in borehole camera images from drilling engineering

Chuanying Wang<sup>1,†\*</sup>, Xianjian Zou<sup>1,2\*</sup>, Zengqiang Han<sup>1</sup>, Jinchao Wang<sup>1</sup>, Yiteng Wang<sup>1</sup>

<sup>1</sup>State Key Laboratory of Geomechanics and Geotechnical Engineering, Institute of Rock and Soil Mechanics, Chinese Academy of Sciences, Wuhan 430071, China

<sup>2</sup>School of Electronic Information, Wuhan University, 430072, Wuhan, China

chywang@whrsm.ac.cn  
zouxianjian@whu.edu.cn

\*Corresponding author. Chuanying Wang, Tel: +8613517105001

\*Corresponding author.

## Abstract

Digital panoramic borehole camera technology has been widely employed in actual projects, and a large number of high-accuracy borehole camera images have been obtained. Borehole camera images accurately record the geological information, especially the feature parameters of structure plane. However, since the acquisition of these features is usually done by hand, the workload is large and the results can be affected by human error. To solve this problem, this paper presents an automatic interpretation method of structure plane parameters in borehole camera image. In this method, image pixel gray, gradient values and projection method are employed to distinguish the occurrence region of structural planes. Then, standard sine function matching method is employed to search the structure plane in the region. Lastly, the optimal sine curve is screened out and adopted as the feature curve of structure plane. Related parameters of sine curve are analyzed and converted into the parameters of structure plane, such as the central position, orientation, dip angle and fracture width of structural planes. This method can automatically identify structure planes in the image continuously and quickly, and obtain the corresponding structural parameters. The method is stable and reliable, and greatly improves the working efficiency. It can perform the automatic interpretation of structure planes and extraction of geometric

Download English Version:

<https://daneshyari.com/en/article/5484224>

Download Persian Version:

<https://daneshyari.com/article/5484224>

[Daneshyari.com](https://daneshyari.com)