

1. Analysis of natural transverse vibration of continuous beam subjected to axial force

Li, Jungqiang ; Fang, Tong

Source: *Jixie Kexue Yu Jishu/Mechanical Science and Technology*, v 17, n 4, p 541-543, 547, Jul 1998; **Language:** Chinese; **ISSN:** 10038728

Abstract: On considering the effect of axial force, the frequency equations and the normal-mode functions of uniform continuous beams simply supported at both ends and with multi-supports are derived by analysis in integration. Both two cases when the supporting forces of the intermediate supports are all zero and when at least one of them is not zero are considered. The formulas can be applied to any continuous beam with any number of intermediate supports and with any axial force, either tensile or compressive. Finally, numerical examples show the effect of axial force on natural frequencies.

Database: Compendex

Data Provider: Engineering Village

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2. Research and application of hydraulic inclining-prevention tools

Yu, Zhiqing (1); Mapkob, O.A. (1)

Source: *Tianranqi Gongye/Natural Gas Industry*, v 18, n 6, p 51-53, Nov 1998; **Language:** Chinese; **ISSN:** 10000976;

Publisher: Nat Gas Ind J Agency

Author affiliation: (1) Xi'an Petroleum Inst, China

Abstract: Hole inclination control is always the problem concerned by drilling circles for a long time. In order to prevent the hole from inclining, a great deal of research works have been made for the inclining-prevention tools and their technology and some inclining-prevention drilling assemblages and downhole inclining-prevention tools corresponding to the technology have been developed. In practice, not only the conventional inclining-prevention drilling assemblages but also the downhole inclining-prevention tools, as unbalanced drill collar and eccentric inclining-prevention junction, etc., are used for preventing the hole from inclining. These methods, however, take the decrease in mechanic drill speed and the increase in drill string wear as the cost in varying degrees and the report upon the research on controlling hole inclination by drilling fluid directional jet stream can't be almost found. In the process of drilling, the drilling fluid directional jet stream can form an unsymmetric flow field at bottom hole, which is favourable for cleaning the bottom hole, enhancing the mechanic drill speed and improving the drilling economic and technological indicators. In this paper, a new downhole tool - flow field whipstock, which can prevent the hole from inclining by the drilling fluid directional jet stream, is proposed and its inclining-prevention mechanism and structure are simply introduced. Through applying in practice, it is proved that this tool is of good properties of the inclining-prevention, inclining-stableness and stabilizing-direction, can enhance the mechanic drill speed and obviously raise the technological and economic benefits. (3 refs)

Main heading: Oil well drilling equipment

Controlled terms: Cost benefit analysis - Drilling fluids - Electric commutators - Hydraulics - Industrial applications - Oil well drilling - Petroleum research - Speed - Stability - Technology

Uncontrolled terms: Commutator - Flow field - Flow field whipstock - Hydraulic energy - Inclining prevention device

Classification Code: 511.2 Oil Field Equipment - 512.1.2 Petroleum Deposits : Development Operations - 632.1

Hydraulics - 901 Engineering Profession - 911 Cost and Value Engineering; Industrial Economics

Treatment: Applications (APP) - General review (GEN)

Database: Compendex

Data Provider: Engineering Village

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3. Study on deephole drilling's stability and its application

Zhu, Lin ; Wang, Shiqing ; Liu, Zhanfeng ; Peng, Hai

Source: *Jixie Gongcheng Xuebao/Chinese Journal of Mechanical Engineering*, v 34, n 3, p 101-106, 1998; **Language:** Chinese; **ISSN:** 05776686

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

4. Improving the quality of automobile gasoline being imperative

Haiqing, Hou

Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 13, n 2, p 61-64, 1998; **Language:** Chinese; **ISSN:** 10015361

Abstract: The overseas current trends are introduced in the study of lead content, octane number and new formulation of automobile gasolines. On the basis of analyses of the requirements of domestic and foreign markets and environmental protection and fact that the gasolines made in China is mainly catalytic cracking fractions, it is suggested that new formulation and high octane number gasolines should be produced by MTBE, reformation and isomerization, and home crude oil should be used as raw material. All fractions of gasoline should be reasonably utilized in order to get good economic benefit.

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5. Application of correlation technique in seismic while drilling

Han, Jiyong

Source: *Xinan Shiyou Xueyuan Xuebao/Journal of Southwestern Petroleum Institute*, v 20, n 1, p 49-52, 1998;

Language: Chinese; **ISSN:** 10002634

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

6. Optical fiber Bragg grating strain sensor

Qiao, Xueguang ; Li, Yulin ; Liu, Jifang ; Hu, Manli

Source: *Binggong Xuebao/Acta Armamentarii*, v 19, n 2, p 143-147, May 1998; **Language:** Chinese; **ISSN:** 10001093

Abstract: When a optical fiber Bragg grating is subject to a strain gradient, it's reflective spectrum will not only be transferred but also be distorted because of the chirp of the grating. We used the T-matrix formalism to calculate the influence of different strain gradients on the reflective spectra of Bragg grating and have undertaken experiments to test these calculations. This confirmed that optical fiber Bragg grating can be used to test strain gradients and can be thought of as quasidistributed strain sensor.

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

7. Kind of design proposal for rotary steering tool and fulfillment of its rotary steering function

Di, Qinfeng ; Zhang, Shaohuai

Source: *Shi You Zuan Cai Gong Yi/Oil Drilling and Production Technology*, v 20, n 3, p 15-19, 1998; **Language:**

Chinese; **ISSN:** 10007393

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

8. Discussion on the electrochemical recovery method and its mechanism

Yun, , Junxian ; Zhang, Ningsheng ; Wu, Xinmin

Source: *Shiyou Kan Tan Yu Kai Fa/Petroleum Exploration and Development*, v 25, n 2, p 57-58, 74, 1998; **Language:**

Chinese; **ISSN:** 10000747

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

9. Feature of jurassic reservoirs in south shaanganning basin and its controlling factors

Wang, Juemin

Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 13, n 2, p 17-21, 52, 1998; **Language:** Chinese; **ISSN:** 10015361

Abstract: The jurassic reservoirs in south Shaanganning Basin are mainly quartzose sandstone, lithic sandstone and lithic-feldspathic sandstone in which secondary pores are well developed. According to capillary pressure curves, the reservoirs can be classified into three types. It is pointed out that the development distribution, texture and properties of the reservoirs are obviously controlled by the initial sedimentary environment, also intensely influenced by diagenesis.

The corrosion of organic acid fluid improves the properties of the reservoirs. The meander bar is beneficial target stratum for oil exploration.

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

10. Application of variable voltage variable frequency technique on intelligent pumping units

Zhao, Laijun ; Yu, Guoan ; Qi, Jiachang ; Zhi, Liguang ; Ni, Zhenwen ; Li, Ruopeng ; Shen, Xin'an ; Lei, Xudong ; Lei, Jianzhong

Source: *Shiyou Jixie/China Petroleum Machinery*, v 26, n 2, p 25-27, 1998; **Language:** Chinese; **ISSN:** 10014578

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

11. Principal component analysis via maximum entropy spectral estimation of machine fault signal

Wang, Jiangpine

Source: *Jixie Kexue Yu Jishu/Mechanical Science and Technology*, v 17, n 6, p 980-982, Nov 1998; **Language:**

Chinese; **ISSN:** 10038728

Abstract: Principal component analysis is taken to separate the faults information of complex machinery. The relationship between the separation of faults and principal component analysis is described. Maximum entropy spectrum is used to estimate the frequency component in separated information. The practical examples are given. The results show that the principal component analysis successfully reduces dimension and complexity. A satisfactory result is acquired.

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

12. Kinematic analysis of beam pumping unit with flexible pitman

Wu, Yijiong

Source: *Shiyou Jixie/China Petroleum Machinery*, v 26, n 3, p 4-7, 1998; **Language:** Chinese; **ISSN:** 10014578

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

13. Method of denoising by multi-scale B spline wavelet transform

Qiang, Lin

Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 13, n 2, p 40-43, 1998; **Language:** Chinese; **ISSN:** 10015361

Abstract: Based on the characteristics of B spline wavelet, the practical formulae are derived for decomposition and reconstruction of signals by wavelet transform. The propagation behavior of the wavelet transform of white noise and spike pulse, negative singularity and the average density of modulus of maxima and variance decreasing with increasing of scale, are analysed in theory and with experiment. According to the propagation behavior, a new method is put forward for removing random noise from signals by wavelet transform. The method has better attenuation to the noises and better restoration to sudden changes of waveform of a signal than mean filter and mid-value filter. It overcomes the shortcoming of obscure border of original signal caused by mean filter and mid-value filter. It can also be used for processing of other signals and has practical value.

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Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

14. Study on a model of adaptive software application platform

Fang, Ming

Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 13, n 2, p 53-56, 1998; **Language:** Chinese; **ISSN:** 10015361

Abstract: The traditional software application platforms generally support the development of softwares in a static and definite manner, which makes the platforms lack the ability to improve themselves performances by using feedback information from application environment. In order to overcome the drawback the sense and learning mechanisms are introduced into the traditional software application platforms, so a model of intelligent adaptive software application platform is formed. It can use feedback information from application environment to improve itself performance, and can acquire the knowledge of the development of application softwares by the interactive learning with application environment. Thus its ability of supporting the development of application softwares is improved.

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

15. Displacing mechanism of the compound system in conglomerate oil reservoir - an example of Karamay conglomerate oil reservoirs

Gao, Yongli ; He, Qiuxuan ; Yan, Qinglai

Source: *Shiyou Kan Tan Yu Kai Fa/Petroleum Exploration and Development*, v 25, n 2, p 65-67, 1998; **Language:** Chinese; **ISSN:** 10000747

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

16. Study on seismic source of a bit in seism while drilling

Han, Jiyong

Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 13, n 2, p 7-12, 1998; **Language:** Chinese; **ISSN:** 10015361

Abstract: The seismic source of a bit in seism while drilling is studied in theory. When a bit impacts bottom hole, the extensional wave travelling along drilling string and the body wave radiating into formation are generated. Compressional wave travels mainly in the direction of borehole axis, and shear wave radiates mainly on the plane perpendicular to the axis. The characteristics of each event of seismic profile while drilling are analyzed. It is found that the delay time of each wave is different, which is a function of wellhead offset distance and the well depth in which the bit is. The time-distance curve is established. A knowledge of the wave modes is essential to well site construction and interpretation of wave field generated by the bit in seism while drilling.

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

17. Model of value classification of oil/gas proved reserves

Hu, Jian ; Liu, Yong'ai ; Pu, Zhizhong

Source: *Shiyou Xuebao/Acta Petrolei Sinica*, v 19, n 1, p 38-46, 1998; **Language:** Chinese; **ISSN:** 02532697

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

18. New method of reanalysis in structural optimization of truss

Liu, Liang ; Zhai, Yuyi

Source: *Jisuan Jiegou Lixue Jiqi Yingyong/Journal of Computational Structural Mechanics and Applications*, v 15, n 2, p 149-153, 160, 1998; **Language:** Chinese; **ISSN:** 10003401

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

19. Application of image processing in simulated displacement test

Gao, Yongli

Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 13, n 2, p 50-52, 1998; **Language:** Chinese; **ISSN:** 10015361

Abstract: As a new experimental method, micro-displacement experiment plays an important part in the study of percolation flow mechanism. The minimal outlet flow rate and difficult separation of oil and water in displacement test make the study stay in qualitative examination stage. The authors give a computer image processing software used for calculating static parameters (porosity, maximum, minimum and mean values of pore throat) and dynamic parameters (oil and water saturation at any moment, area flow rate/velocity of flow) in the process of micro-displacement simulation experiments. The development of the software makes the study go forward from qualitative examination stage to quantitative examination stage.

Database: Compendex

Data Provider: Engineering Village

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20. Laboratory study of a kind of material used for antileakage and lost circulation control of oil and gas formation

Xu, Huayi ; Zhang, Shaohuai ; Chen, Jun ; Tian, Hejin ; Zhou, Fengshan

Source: *Shi You Zuan Cai Gong Yi/Oil Drilling and Production Technology*, v 20, n 1, p 49-51, 1998; **Language:**

Chinese; **ISSN:** 10007393

Database: Compendex

Data Provider: Engineering Village

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21. Study of the method of controlling borehole trajectory with controllable eccentric

Yu, Ziqing

Source: *Xinan Shiyou Xueyuan Xuebao/Journal of Southwestern Petroleum Institute*, v 20, n 3, p 52-54, 1998;

Language: Chinese; **ISSN:** 10002634

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

22. Function description and extended application of well site computer system

Li, Qi (1)

Source: *Tianranqi Gongye/Natural Gas Industry*, v 18, n 1, p 44-47, Jan 1998; **Language:** Chinese; **ISSN:** 10000976;

Publisher: Nat Gas Ind J Agency

Author affiliation: (1) Xi'an Petroleum Inst, China

Abstract: This paper gives a more systematic description on the structure and can-be-realized function of well site computer from the construction, real time application and non-real time application, based on the comprehensive analysis of domestic and foreign existing various computerized apply drilling technologies, well site computer centers and real-time systems. Well site computer system is no longer a simple drilling parameter apparatus or used for simply monitoring the general drilling operation process and for out-of-limit alarm. Its function has been progressively extended and it can be used for predicting and interpreting various complex situations arisen during drilling by comprehensively analyzing a lot of datum acquired both from the surface and underground. It can make the real time analysis and monitoring for each drilling operating mode and can also make various off-line non-real time analysis, design and calculation. The paper also gives the further extensible application function of well site computer system.

Main heading: Natural gas well drilling

Controlled terms: Calculations - Computer aided analysis - Computer aided design - Computer systems - Data acquisition - Forecasting - Monitoring - Real time systems

Uncontrolled terms: Well site computer systems

Classification Code: 512.2.2 Natural Gas Deposits: Development Operations - 722.4 Digital Computers and Systems - 723.2 Data Processing and Image Processing - 723.5 Computer Applications - 921 Mathematics

Treatment: Theoretical (THR)

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

23. Color display of 3D oil reservoir model

Zheng, Kaidong

Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 13, n 2, p 47-49, 64, 1998; **Language:** Chinese; **ISSN:** 10015361

Abstract: Color display of 3D oil reservoir model is a key technique to oil reservoir numerical simulation, which is the stereographic map displaying the physical properties of reservoirs, physical property interval map, body fence map, etc. get by transferring original geologic data into mesh spatial geometric model by geologic statistics method. The interpolation calculation and the coloration for every image element point within meshes avoid serrated border of physical property interval. The values of physical parameters at mesh nodal points are used in coloring, which makes the maps directly reflect the true state of reservoirs. The 3D oil reservoir maps get by the method are thought practical after being used by Logging Company of Shengli Oilfield and Geophysical Prospecting Bureau.

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

24. Optimum charge and peak pressure calculation of high energy gas fracturing

Li, Wenkui ; Wu, Hongli ; Zhao, Wei

Source: *Shi You Zuan Cai Gong Yi/Oil Drilling and Production Technology*, v 20, n 3, p 91-94, 1998; **Language:** Chinese; **ISSN:** 10007393

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

25. Application of pattern recognition to automatically tracking seismic profile events

Han, Jiyong

Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 13, n 2, p 12-16, 1998; **Language:** Chinese; **ISSN:** 10015361

Abstract: Pattern recognition is applied to automatically tracking seismic profile events. Iteration method is used in the process of tracking. Strong events are tracked in first iteration and in later iterations, weaker events are tracked. Each iteration is confined within the areas delineated by the events tracked in last iteration. By correlating neighboring seismic traces, the events are tracked. An algorithm called binary consistency checking (BCC) can correlate three traces at the same time. After the events are tracked, they are automatically edited, and the relative parameters for describing events are presented. The combination of iteration with BCC algorithm is effective in simulating manual interpretation and incorporating 'geologic trend' into the final result.

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

26. Application of fractal interpolation in the forecasting of fractures

Du, Xiaowu ; Shang, Haiyan

Source: *Xi'an Dianzi Keji Daxue Xuebao/Journal of Xidian University*, v 25, n 2, p 174-176, 180, 1998; **Language:** Chinese; **ISSN:** 10012400

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

27. Wavelet analysis and its application to fault diagnosis for a diesel engine

Wang, Hongfei ; Wang, Jiangping

Source: *Jixie Kexue Yu Jishu/Mechanical Science and Technology*, v 17, n 3, p 440-441, 489, May 1998; **Language:** Chinese; **ISSN:** 10038728

Abstract: After a brief review of the wavelet transform and its properties, a new method for deciding the characteristic frequency band of the vibration signal based on wavelet analysis and Kullback Leibler's minimum information is suggested. Some applications to the fault diagnosis for diesel engine are given.

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

28. Design and realization of the computer simulation system for the spherical pigging in gas pipeline

Li, Tiantai (1); Fang, Ming (1); Yang, Junquan (1); Liu, Xiangdong (1); Zhang, Zhenwen (1); Shan, Jiquan (1)

Source: *Tianranqi Gongye/Natural Gas Industry*, v 18, n 3, p 69-71, May 1998; **Language:** Chinese; **ISSN:** 10000976;

Publisher: Nat Gas Ind J Agency

Author affiliation: (1) Xi'an Petroleum Inst, China

Abstract: Owing to the fact that the gas pipeline is shallowly buried underground, the operation of the spherical pig can't be directly observed in the process of spherical pigging, the change of the pressures at the entrance and exit of pipeline can't be also forecasted in the movement of the spherical pig and it is difficult to accurately control the inlet gas flow to make the spherical pig reaching the exit at a velocity of 1 m/s, for which the design and realization of the computer simulation system for the spherical pigging in gas pipeline are carried out. On the basis of analyzing and studying the factors affecting the operation rule of the spherical pigging in gas pipeline, the simulation system was developed by taking the advanced techniques, such as the data base administration, computer simulation and artificial intelligence, etc., as the major means. The overall structure, function design, program composition and debugging of the simulation system are emphatically introduced in the paper. The movement of the spherical pig in pipeline can be simulated by the simulation system. Through multiple simulation for the operation of the spherical pigging in the gas pipeline from Jingbian to Yushu, its coincidence rate is more than 93%.

Main heading: Gas pipelines

Controlled terms: Artificial intelligence - Computer simulation - Computer systems - Database systems - Flow control - Natural gas

Uncontrolled terms: Mathematical simulation - Spherical pigging

Classification Code: 522 Gas Fuels - 619.1 Pipe, Piping and Pipelines - 631.1 Fluid Flow, General - 722.4 Digital Computers and Systems - 723.3 Database Systems - 723.5 Computer Applications

Treatment: Applications (APP) - Theoretical (THR)

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

29. Analysis and applications of root mean-square converter

Meng, Kaiyuan (1)

Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 13, n 5, p 31-34, 1998; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute

Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: The intensity of any non-periodic signal may only be expressed by its RMS. Some possible ways to realize RMS are discussed and compared. LH0091 root mean-square converter is made by the American National Semiconductor Corporation. It adopts implicit calculation method and has a good performance. Its application range is also discussed by some examples. (3 refs)

Main heading: Electronic equipment

Controlled terms: Electric converters - Integrated circuits - Root loci - Signal theory - Stochastic control systems

Uncontrolled terms: Root mean square converter - Stochastic signal

Classification Code: 704.2 Electric Equipment - 714.2 Semiconductor Devices and Integrated Circuits - 715.1 Electronic Equipment, non-communication

Treatment: Applications (APP) - Theoretical (THR) - Experimental (EXP)

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

30. FDTD method for studying transient electromagnetic waves propagating and scattering in magnetized plasma

Fu, Haiwei (1); Duan, Zhemin (1); Yin, Wenyan (1)

Source: *Tien Tzu Hsueh Pao/Acta Electronica Sinica*, v 26, n 6, p 119-120, 118, 1998; **Language:** Chinese; **ISSN:** 03722112; **Publisher:** Chinese Institute of Electronics

Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: A set of FDTD formulation of magnetized plasma is derived, which involves electron motion equation of magnetized plasma under electromagnetic field. This has overcome the defects of recursive convolution method which is not suitable for the incident pulse with D.C component and is a small signal approximation. The accuracy of this method is demonstrated by numerical computations. (6 refs)

Main heading: Electromagnetic wave propagation

Controlled terms: Electromagnetic wave scattering - Finite difference method - Magnetoplasma

Uncontrolled terms: Finite difference time domain

Classification Code: 701.2 Magnetism: Basic Concepts and Phenomena - 711 Electromagnetic Waves - 921.6 Numerical Methods - 932.3 Plasma Physics
Treatment: Applications (APP) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

31. Simultaneous measurement of strain and temperature with different period Λ and superimposed optical fiber Bragg grating sensors

Qiao, Xueguang (1); Li, Yulin (1); Hu, Manli (1); Zhang, Peikun (1)
Source: *Yingyong Jiguang/Applied Laser Technology*, v 18, n 6, p 254-257, 1998; **Language:** Chinese; **ISSN:** 1000372X; **Publisher:** Sci Publ House

Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: A novel method to separate the effects of concurrent axial strain and temperature by using a single optical fiber with different period Λ and different center wavelength's superimposed Bragg grating was introduced. The temperature and strain changes can be recovered by measuring the relative difference in the two center wavelength shifts with simple modulation and demodulation technique. The largest difference between the measured and the actual values of strain and temperature is 40 μE and 0.5 $^{\circ}\text{C}$ respectively. (4 refs)

Main heading: Strain measurement

Controlled terms: Diffraction gratings - Optical fibers - Optical sensors - Temperature measurement

Uncontrolled terms: Bragg gratings

Classification Code: 741.1.2 Fiber Optics - 741.3 Optical Devices and Systems - 943.2 Mechanical Variables Measurements - 944.6 Temperature Measurements

Treatment: Applications (APP) - Experimental (EXP)

Database: Compendex

Data Provider: Engineering Village

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32. Experimental study on optimization of three physical lost circulation additives

Xu, Huayi (1)

Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 13, n 1, p 26-29, 1998; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute

Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: The sealing effects of three lost circulation additives are compared with (AP2) DS-2 lost circulation instrument. It is shown that DTR can effectively seal permeable formations and the fractures whose width is less than 1mm. When it is mixed with walnut shells, the mixture can seal wider fractures. 'Danfeng' is only suitable to permeable formations. When it is mixed with DTR in the ratio of 3:2, the sealing effectiveness can be greatly increase. When it is mixed with DTR and walnut shells in the ratio of 3:2:2, the best result can be achieved. The experimental results also show that, as the concentration of lost circulation additives in drilling fluid increases, the sealing effectiveness increases, but the maximum sizes of fractures and pores is definite that can be sealed. Therefore, proper concentration and wide distribution of lost circulation additive's particle sizes are two key factors to physical lost circulation. (2 refs)

Main heading: Additives

Controlled terms: Fracture - Optimization - Sealing (closing)

Uncontrolled terms: Composite ratio - Concentration - Drilling fluid - Loss circulation material - Permeable formation - Walnut shell

Classification Code: 803 Chemical Agents and Basic Industrial Chemicals

Treatment: Experimental (EXP)

Database: Compendex

Data Provider: Engineering Village

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33. On-side calibration of the device for the recovery of flue gas energy in Catalytic cracking

Zhang, Lixin (1); Guo, Xiaobo (1)

Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 13, n 5, p 51-55, 1998; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute

Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: The efficiency of catalytic cracking flue gas energy recovery device is required being periodically calibrated. By means of power equilibrium equation, a simple and convenient on-side calibration method is put forward. The efficiency of the flue gas turbine in the catalytic cracking device in a refinery is calibrated by the method. Compared with actual recovery efficiency, the calibration result is of high accuracy. It is held that it is necessary to calibrate the devices every two years. It is pointed out that correct and stable operation is the key factor influencing their efficiency. (6 refs)

Main heading: Petroleum refining

Controlled terms: Calibration - Catalytic cracking - Energy conservation - Exhaust gases - Gas turbines

Uncontrolled terms: Flue gas energy recovery - Flue gas turbine

Classification Code: 513.1 Petroleum Refining, General - 525.2 Energy Conservation - 802.2 Chemical Reactions

Treatment: Applications (APP) - Theoretical (THR) - Experimental (EXP)

Database: Compendex

Data Provider: Engineering Village

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34. Modern well testing analysis theory and methods of remaining oil distribution in waterflooding reservoir

Suimin, Cheng (1); Yanchun, Su (1); Jiaen, Lin (1); Qiliang, Mei (1)

Source: *Proceedings of the International Oil & Gas Conference and Exhibition in China, IOGCEC*, v 2, p 241-253,

1998; **Conference:** Proceedings of the 1998 6th International Oil & Gas Conference and Exhibition in China, IOGCEC.

Part 2 (of 2), November 2, 1998 - November 6, 1998; **Publisher:** Soc Pet Eng (SPE)

Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: This paper presents two new methods to analyze remaining oil distribution in high-water-cut reservoir by modern well test interpretations of water injection wells and water breakthrough producers. For water injected wells, after the pressure transient behavior of two phase simultaneous flow in a water injection area is investigated^{1,5}, the pseudo skin factor resulted from the two phase flow is determined. Oil/water relative permeability curve can be determined from the factor, combined with mobility from falloff test analysis, then remaining oil distribution can be determined. For water-breakthrough producers, mathematical models of flooding reservoir and their resolution are presented by approximated method of composite reservoir with multiple movable fluid interfaces. An artificial neural network was also build up to get relative permeability curve from well-test data. The two methods are examined by software to get oil distribution in large scale of whole oil field. (17 refs)

Main heading: Petroleum reservoirs

Controlled terms: Approximation theory - Computer software - Injection (oil wells) - Mathematical models -

Mechanical permeability - Neural networks - Oil fields - Oil well flooding - Oil well testing - Two phase flow - Well flooding

Uncontrolled terms: Falloff tests - Pseudo skin factor

Classification Code: 511.1 Oil Field Production Operations - 512.1.1 Oil Fields - 631.1 Fluid Flow, General - 921

Mathematics - 921.6 Numerical Methods - 931.2 Physical Properties of Gases, Liquids and Solids

Treatment: General review (GEN) - Theoretical (THR)

Database: Compendex

Data Provider: Engineering Village

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35. Polymer-supported dibenzo-18-C-6 catalyzed synthesis of n-butyl benzoate

Zhang, Qunzheng (1)

Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 13, n 1, p

53-54, 1998; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute

Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: N-butyl benzoate is synthesized under catalyzing of phase transfer polymer-supported dibenzo-18-C-6. It is found that the catalytic activity of polymer-supported dibenzo-18-C-6 is higher than that of 18-C-6, and after it worked 15 times, its catalytic activity has little decline. (5 refs)

Main heading: Catalysts

Controlled terms: Catalysis - Catalyst activity - Catalyst regeneration - Phase shift - Polymers - Synthesis (chemical)

Uncontrolled terms: Benzoic acid - Butyl benzoate - High molecular compound - Phase transfer

Classification Code: 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804

Chemical Products Generally - 815.1 Polymeric Materials

Treatment: Experimental (EXP)

Database: Compendex

Data Provider: Engineering Village
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36. Factors affecting the synthesis of microsized NaY zeolite

Wang, Bo (1); Ma, Hongzhu (1)

Source: *Microporous and Mesoporous Materials*, v 25, n 1-3, p 131-136, Dec 9 1998; **ISSN:** 13871811; **DOI:** 10.1016/S1387-1811(98)00195-4; **Publisher:** Elsevier Sci B.V.

Author affiliation: (1) Xi'an Petroleum Coll, Xi'an, China

Abstract: A detailed investigation was carried out to determine the effects of time and temperature of aging and crystallization on the synthesis of microsized NaY zeolite. Gels were prepared by adding a sodium silicate solution to an initial solution of aluminosilicate and stirring until a clear mixture formed, then adding aluminum sulfate solution and sodium aluminate solution in sequence. After stirring for 1 h, gels with the composition $\text{Na}_2\text{O}:\text{Al}_2\text{O}_3:\text{SiO}_2:\text{H}_2\text{O} = 3.01:1.00:7.50-10.0:200$ were aged at fixed temperature and time, and then crystallized at 100 °C. The kinetics of crystallization were followed by powder X-ray diffraction. Compositional and structure information was provided by elemental chemical analysis, infrared and Raman spectroscopies and scanning electron microscopy. It was found that the rate of crystallization and the composition of the crystalline products depend strongly on the aging time and temperature. Compared with the unaged sample, the average particle size of the aged products decreased from 2.8 to 0.25 μm and the overall particle distribution reduced from the 0.5-5 μm range to 0.05-0.8 μm . With yield greater than 95%, the ratio of Si/Al#5.5. The decomposition temperature (as measured by dynamic thermal analysis) is as high as 890 °C and the surface area reaches 1050 m^2/g . (14 refs)

Main heading: Zeolites

Controlled terms: Aging of materials - Crystal structure - Crystallization - Decomposition - Gels - Particle size analysis - Reaction kinetics - Synthesis (chemical) - Thermal effects - Thermoanalysis

Uncontrolled terms: Aluminum sulfate - Microsized zeolites - Sodium aluminate

Classification Code: 801.3 Colloid Chemistry - 802.2 Chemical Reactions - 802.3 Chemical Operations - 804 Chemical Products Generally - 804.2 Inorganic Compounds - 933.1.1 Crystal Lattice

Treatment: Experimental (EXP)

Database: Compendex

Data Provider: Engineering Village

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37. Determination of the asphaltine content in crude oil by spectrophotometric method

Wang, Yukun (1); Rong, Yaosen (1); Qiu, Tingsheng (1); Fan, Hongzhen (1); Ran, Mengyin (1)

Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 13, n 5, p 35-39, 1998; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute

Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: Some factors affect the determination of asphaltine content in crude oil by dual-wavelength spectrophotometric method. These factors are analyzed by means of a mixed oil of the asphaltine separated by gravimetric analysis method with a component soluble in heptane. It is shown that with present dual-wavelength spectrophotometers, the determination is not successful. In experiments, it is found that there is a good linear relationship between the light absorption of the mixed oil determined by single-wavelength spectrophotometric method and the asphaltine content. The spectrophotometric method for the determination of asphaltine content based on the relationship is discussed. (4 refs)

Main heading: Crude petroleum

Controlled terms: Asphalt - Chemical analysis - Composition - Spectrophotometry

Uncontrolled terms: Crude oil asphalt content - Spectrophotometer application

Classification Code: 411.1 Asphalt - 512.1 Petroleum Deposits - 941.4 Optical Variables Measurements

Treatment: Applications (APP) - Experimental (EXP)

Database: Compendex

Data Provider: Engineering Village

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38. Improvement of the load conditions of great power pumping systems using fiberglass-steel sucker rod string

Peng, Yong (1); Xu, Jianning (1); Jiang, Yangmin (1)

Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 13, n 5, p 48-50, 55, 1998; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute

Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: By the solution of fiberglass-steel combination sucker rod string wave equation, the load conditions of the great power pumping systems with the combination sucker rod string are analysed. It is held that with the suitable combination of fiberglass sucker rod and steel sucker rod, the overloads of polish rod load and crank shaft torque can be overcome, and the oil well production is also ensured because its over-travel overcomes the stroke loss produced by the deformation of sucker rod string. (4 refs)

Main heading: Oil well pumps

Controlled terms: Oil field equipment - Oil well drilling - Reinforced plastics - Well equipment

Uncontrolled terms: Fiber glass sucker rod - Rod string

Classification Code: 511.2 Oil Field Equipment - 618.2 Pumps - 817.1 Polymer Products

Treatment: Applications (APP) - Theoretical (THR)

Database: Compendex

Data Provider: Engineering Village

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39. Simulational study of viscous fingering in fractured reservoirs

Zhang, J.H. (1); Liu, Z.H. (1); Qu, S.X. (1)

Source: *Proceedings of the International Oil & Gas Conference and Exhibition in China, IOGCEC*, v 2, p 273-278, 1998; **DOI:** 10.2118/50906-ms; **Conference:** Proceedings of the 1998 6th International Oil & Gas Conference and Exhibition in China, IOGCEC. Part 2 (of 2), November 2, 1998 - November 6, 1998; **Publisher:** Soc Pet Eng (SPE)

Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: Viscous fingering phenomena occurring in fluid displacement process are simulated by using the fractal theory in heterogeneous reservoirs. Networks of random fractures are constructed using successive random adding method in two-dimensional areal simulations. A modified fractal growth model, in which the interfacial tension effects in the boundary of displacing and displaced fluids are taken into account, is employed to simulate the immiscible displacement of native oil by injected water in fracture-network reservoirs. The results suggest that the geometry of a fracture network influence upon the displacement process significantly. Increasing fracture width, or increasing linear density of fractures, or decreasing Hurst exponent of a fracture, will lead to the dominant movement of driving fluid along the fractures. The fractures control the flooding pattern. Fingers grow easier at the orientations of fractures. Therefore, the areal sweep efficiency decreases, but the sweep efficiency along fractures increases. Furthermore, the distribution of a fracture network also affects the development and evolution of fluid displacement. (8 refs)

Main heading: Petroleum reservoir evaluation

Controlled terms: Computer simulation - Fractals - Fracturing (oil wells) - Fracturing fluids - Injection (oil wells) - Oil well flooding - Surface tension

Uncontrolled terms: Fractal growth model - Fractal theory - Hurst exponent - Viscous fingering

Classification Code: 511.1 Oil Field Production Operations - 512.1.2 Petroleum Deposits : Development Operations - 723.5 Computer Applications - 921 Mathematics - 931.2 Physical Properties of Gases, Liquids and Solids

Treatment: General review (GEN) - Theoretical (THR)

Database: Compendex

Data Provider: Engineering Village

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40. Control of chip length in vibration drill cutting and the optimal range of overlapping coefficient

Feng, Kai (1); Wang, Shiqing (1); Liu, Zhanfeng (1)

Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 13, n 6, p 42-45, 1998; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute

Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: Vibration drill cutting is more and more widely applied. The most important difficulty to be solved in the technique is the control of the length of drill chip. The effects of all parameters in vibration drill cutting, especially overlapping coefficient i , on the length of chip are analyzed. It is held that the best range of i is 0-0.5. (3 refs)

Main heading: Drilling

Controlled terms: Cutting - Drilling machines (machine tools) - Machining - Vibrations (mechanical)

Uncontrolled terms: Chip length control - Overlapping coefficient

Classification Code: 604.2 Machining Operations - 931.1 Mechanics

Treatment: Applications (APP) - Theoretical (THR) - Experimental (EXP)

Database: Compendex

Data Provider: Engineering Village

Compilation and indexing terms, Copyright 2023 Elsevier Inc.

41. Development of the automatically measuring system for 80 MPa skid-mounted cementing and fracturing unit

Wu, Yinglong (1); Cui, Qilin (1); Mu, Xiangyang (1)

Source: *Journal of Dong Hua University (English Edition)*, v 15, n 3, p 29-32, 1998; **Language:** Chinese; **Publisher:** China Text Univ

Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: A skid-mounted cementing and fracturing unit used in desert oil-fields is required accurately to measure the density, flow and pressure of slurry in order to ensure the quality of cementing and fracturing. A high quality sensor as primary instrument, and a good performance STD-bus industrial computer as secondary instrument form a complete automatic measuring system. The sensor transforms the density, flow and pressure signals of slurry into voltage signals, which are further changed into 4-20 mA current signals through a transducer. The industrial computer receives the current signals and converts them into 1-5 V DC voltage signals. The voltage signals are filtered, sampled, and then transformed into digital signals by A/D converter. After being processed, they are displayed on the computer as the values of density, instantaneous rate of flow, total flow and pressure. In order to remotely transmit, a wireless communication system was added between the computer and the site. These data are transmitted to the operators in the site. The system has high anti-interference, reliability and accuracy. (1 refs)

Main heading: Oil well drilling equipment

Controlled terms: Automation - Design - Drilling fluids - Measurements - Oil well drilling

Uncontrolled terms: Desert drilling - Drilling fluid measuring

Classification Code: 511.2 Oil Field Equipment - 512.1 Petroleum Deposits - 731.1 Control Systems

Treatment: Applications (APP) - Theoretical (THR) - Experimental (EXP)

Database: Compendex

Data Provider: Engineering Village

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42. Analysis of the prominence failure of coke chamber

Zhao, Ying (1); Zhou, Hong (1)

Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 13, n 6, p 38-41, 1998; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute

Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: The causes leading to the prominence failure of coke chamber are analyzed. According to the analyses of the changes in conventional mechanical properties, fracture toughness, metallograph and fractography of coke chamber material, it is held that the changes are not the main causes. By calculating the membrane stress, creep stress and thermal stress of chamber body, it is found that they are not great enough to lead to prominence failure. The residual stress is probably the main cause produced in the chamber wall whose contraction is restricted when hot oil cools in the chamber. After the thermal expansion coefficient and elastic modulus of coke are measured, the residual stress is calculated. The result shows that its value is great enough to cause the prominence failure of coke chamber. (4 refs)

Main heading: Petroleum refineries

Controlled terms: Failure analysis - Flare stacks - Petroleum refining - Residual stresses - Thermal expansion

Uncontrolled terms: Coke chamber prominence - Prominence damage analysis

Classification Code: 421 Strength of Building Materials; Mechanical Properties - 513.1 Petroleum Refining, General - 513.2 Petroleum Refineries

Treatment: Applications (APP) - Theoretical (THR) - Experimental (EXP)

Database: Compendex

Data Provider: Engineering Village

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43. Oxygen and reactive oxygen species

Wang, Yukun (1)

Source: *Xi'an Shiyou Xueyuan Xuebao/Journal of Xi'an Petroleum Institute (Natural Science Edition)*, v 13, n 2, p 57-60, 1998; **Language:** Chinese; **ISSN:** 10015361; **Publisher:** Xi'an Petroleum Institute

Author affiliation: (1) Xi'an Petroleum Inst, Xi'an, China

Abstract: In this paper, the derivation of reactive oxygen species and their physicochemical properties are discussed briefly. Fact is well known that oxygen and reactive oxygen species damage plants, animals and other aerobic

organisms. Of reactive oxygen species, the most harmful chemicals are OH, HO₂, O₂•, etc. But during evolution of all living organisms, nature endows them with more effective functions removing reactive oxygen species to protect them from the damages of the reactive oxygen species such as biochemical antioxidants system, enzymatic antioxidant system, DNA or cell repair, immunity and cell pigment system, etc.. It is the delicate balance in vivo between the rate of generation of reactive oxygen species and the rate of their removal by different defensive mechanisms, and between the rate of oxidative damage caused by the reactive oxygen species and the rate of the DNA (or cell) repair by repair system that ensures the organisms survival and full of vitality. Some diseases relating to reactive oxygen species are also discussed briefly. (10 refs)

Main heading: Oxygen

Controlled terms: Antioxidants - Diseases - DNA - Living systems studies - Physical properties - Plants (botany)

Uncontrolled terms: Aerobic organisms - Animals - Physicochemical properties - Reactive oxygen species

Classification Code: 461.1 Biomedical Engineering - 461.6 Medicine and Pharmacology - 461.9 Biology - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally - 931.2 Physical Properties of Gases, Liquids and Solids

Treatment: Experimental (EXP)

Database: Compendex

Data Provider: Engineering Village

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44. Study of the relationship between fractal dimension and viscosity ratio for viscous fingering with a modified DLA model

Zhang, Jian-hua (1); Liu, Zhen-hua (1)

Source: *Journal of Petroleum Science and Engineering*, v 21, n 1-2, p 123-128, September 1998; **ISSN:** 09204105;

DOI: 10.1016/S0920-4105(98)00038-2; **Publisher:** Elsevier

Author affiliation: (1) Xi'an Petroleum Institute, Xi'an 710065, China

Abstract: The morphological evolution characters of viscous fingering, which occurred in two-dimensional Hele-Shaw cells with various viscosity ratio of the displaced-to-driving fluids from 1 to 10 000, were simulated by a modified DLA model on off-lattices. The model can reproduce experimental patterns conveniently and generate various finger growth aggregations from skeletal patterns to fleshy patterns. Both the shapes and the fractal dimension of fractal clusters obtained by controlling the parameters in the present model are in good agreement with experiments. The present work indicates that the effective fractal dimension of viscous fingering decreases and the corresponding morphologies of finger growth vary from fleshy patterns to skeletal patterns when viscosity ratio VR is increased in laboratory scale. Low fractal dimension corresponds to very ramified viscous fingering fractal structure and short breakthrough time. In small scale, the effective fractal dimension can be reasonably regarded as a useful parameter for the fluid displacement process. In the scale of laboratory experiments, the unfavorable viscous fingering can be controlled by reducing the viscosity ratio, thus, increasing the effective fractal dimension of viscous fingering. (20 refs)

Main heading: Viscous flow

Controlled terms: Fractals - Geometry - Mathematical models - Morphology - Statistical methods - Viscosity of liquids

Uncontrolled terms: Fractal dimension - Viscosity ratio - Viscous fingering

Classification Code: 631.1 Fluid Flow, General - 921 Mathematics - 922.2 Mathematical Statistics - 931.2 Physical Properties of Gases, Liquids and Solids

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Treatment: Theoretical (THR) - Experimental (EXP)

Database: Compendex

Data Provider: Engineering Village

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45. Autoanalysis system for stroboscopic holographic interferometry

Wang, Xiwen (1); Kang, Ming (2)

Source: *Proceedings of SPIE - The International Society for Optical Engineering*, v 3479, p 247-250, 1998, *Laser Interferometry IX: Applications*; **ISSN:** 0277786X; **DOI:** 10.1117/12.316454; **Conference:** Laser Interferometry IX: Applications, July 22, 1998 - July 22, 1998; **Publisher:** SPIE

Author affiliation: (1) Mechanical Engineering Department, Xi'an Petroleum Institute, Xi'an 710065, China (2) Xian Aeroengine Corp., Xi'an 710021, China

Abstract: In this paper, an analysis theory of real-time stroboscopic holographic interferometry with fringe drift counting technique is discussed. Based on the theory, a real-time auto-analysis system for stroboscopic interferometry is researched. The system can be used to analyzing object's vibration. The difficulty of identifying the node-locus in stroboscopic interference pattern is disposed. And the influence of primitive fringe on the quantitative analysis of the real-time holography is also eliminated. (3 refs)

Main heading: Holographic interferometry

Controlled terms: Vibration analysis

Uncontrolled terms: Analysis of vibration - Analysis system - Analysis theory - Analyzing system - Counting techniques - Interference patterns - Real-time holography - Stroboscopic interferometry

Classification Code: 743 Holography - 743.2 Holographic Applications - 746 Imaging Techniques

Database: Compendex

Data Provider: Engineering Village

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46. A method to evaluate reservoirs and estimate saturation by dynamic responses of dual-induction logging tools

Zhang, Jian-Hua (1); Hu, Qi (1); Oyang, Jian (2); Lin, Chun-Zeng (2)

Source: *Journal of Petroleum Science and Engineering*, v 19, n 3-4, p 233-240, March 1998; **ISSN:** 09204105; **DOI:** 10.1016/S0920-4105(97)00046-6; **Publisher:** Elsevier Sci B.V.

Author affiliation: (1) Xi'an Petroleum Institute, Xi'an 710065, China (2) Research Center of Petroleum Exploration and Development, Kuerla 834000, China

Abstract: The invasion of drilling mud-filtrate into a reservoir is a dynamic process. Formation-resistivity profiles are therefore invasion-time dependent. The dynamic response model for resistivity logs is established and solved by numerical methods. The present model gives more physical understanding to the invasion process than the conventional step model does. The dynamic resistivity responses are sensitive to the variations of formation-water saturation, hence an effective method to evaluate reservoirs is suggested by history matching the dynamic dual-induction logging readings. Field examples are illustrated that distinguish oil reservoirs, water zones, and oil/water zones, as well as define the oil-water interface by the responses of induction logs at different logging times after drilling. (9 refs)

Main heading: Petroleum reservoir evaluation

Controlled terms: Induction logging - Mathematical models - Numerical methods - Oil well drilling - Oil well logging - Phase interfaces - Saturation (materials composition)

Uncontrolled terms: Dynamic response model

Classification Code: 512.1.2 Petroleum Deposits : Development Operations - 801.4 Physical Chemistry - 921 Mathematics - 921.6 Numerical Methods

Treatment: Theoretical (THR)

Database: Compendex

Data Provider: Engineering Village

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47. Scaling properties of the period-adding sequences in a multiple Devil's staircase

Wu, Cai-Yun (1); Qu, Shi-Xian (2); Wu, Shun-Guang (3); He, Da-Ren (1, 3, 4)

Source: *Chinese Physics Letters*, v 15, n 4, p 246-248, 1998; **ISSN:** 0256307X; **DOI:** 10.1088/0256-307X/15/4/005;

Publisher: IOP Publishing Ltd

Author affiliation: (1) Department of Physics, Teachers College, Yangzhou University, Yangzhou 225002, China (2) Department of Basic Courses, Xi'an Petroleum Institute, Xi'an 710065, China (3) Department of Physics, Northwestern University, Xi'an 710069, United States (4) Institute of Theoretical Physics, Chinese Academy of Sciences, Beijing 100080, China

Abstract: In this letter the scaling properties of the period-adding sequences in a so-called "multiple Devil's staircase" are reported. It is certified both analytically and numerically that the width of the i -th phase-locked plateau in a sequence scales as $\ln |e(i)| \propto i$, and the position of the plateau scales as $\ln |e\# - e_i| \propto i$. These properties are qualitatively different from those of the period-adding sequences in conventional Devil's staircases. ©by Allerton Press, Inc. (7 refs)

Main heading: Stairs

Uncontrolled terms: Devil's staircase - Period adding - Phase locked - Property - Scaling properties

Classification Code: 402 Buildings and Towers

Database: Compendex

Data Provider: Engineering Village

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