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Le Van Ha

AN APPROACH TO THE SOLUTION OF THE HANOI TRAFFIC PROBLEM

Pham Xuan Hinh

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Abstract: *The construction and management of the transport system are one of the key issues for a developing country like our country in general and for Hanoi city in particular. Besides the investment in infrastructure development, the problem of organizing and managing the transport system is urgently raised. In this paper, we present a model for traffic schedule setting with multiple control centers and approaches to the solution as well as the applicability for Hanoi bus network.*

Keywords: *Traffic schedule setting.*

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CONSIDER SOME CONCEPTS IN ALGEBRA AND CATEGORY THROUGH THE TERMINAL AND INITIAL IN CATEGORY THEORY

Dong Huu Mau

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Abstract: *The article shows that some concepts in algebra and category are the terminal object or initial object of a certain category. In other words, some algebraic concepts can be defined through the terminal object or initial object in category theory.*

Keywords: *Category theory, terminal object, initial object, algebraic concept.*

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KERAS AND APPLICATION FOR IMAGE CLASSIFICATION

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Abstract: *Keras is a deep learning API written in Python, it is developed with the aim of enabling fast experimentation. This paper presents a method using CNN model in keras framework to classify handwritten numbers. The model applied is simple to use and the result obtained is very precise. The result of this study provides a helpful method to solve other image classification issues.*

Keywords: *Algorithm, computer vision, CNN, image classification, Keras, model.*

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A LIOUVILLE TYPE THEOREM FOR KIRCHHOFF ELLIPTIC EQUATIONS INVOLVING Δ_λ OPERATORS

Nguyen Thi Thu Huong

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Abstract: *In this paper, we study the Kirchhoff elliptic equations*

$$-M(|\nabla_\lambda u|^2)\Delta_\lambda u = -u^{-p}w(x) \text{ in } \mathbb{R}^N,$$

where Δ_λ is the degenerate Δ_λ operator in \mathbb{R}^N , $N \geq 3$, the exponent $p > 0$, and $w(x)$ is a weight function. We establish a Liouville type theorem for the class of continuous positive stable solutions. In particular, our results improve existing results in [11] and [13].

Keywords: *Liouville type theorem, Δ_λ operator, Stable solutions, Kirchhoff equations.*

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ĐỊNH LÝ KIỂU LIOUVILLE CHO PHƯƠNG TRÌNH KIRCHHOFF LOẠI ELIP CHỨA TOÁN TỬ Δ_λ

Tóm tắt: Trong bài báo, chúng tôi nghiên cứu phương trình Kirchhoff loại elip

$$-M(\|\nabla_\lambda u\|^2)\Delta_\lambda u = -u^{-p}w(x) \text{ in } \mathbb{R}^N,$$

trong đó Δ_λ là toán tử suy biến trên \mathbb{R}^N , $N \geq 3$, số mũ $p > 0$, và $w(x)$ là hàm trọng. Chúng tôi chứng minh một định lý kiểu Liouville cho lớp nghiệm ổn định dương liên tục. Nói riêng, kết quả của chúng tôi mở rộng kết quả trong [11] và [13].

Từ khóa: Định lý kiểu Liouville, toán tử Δ_λ , nghiệm ổn định, phương trình Kirchhoff.

THE CALCULATION OF THE ETTINGSHAUSEN COEFICIENT IN QUANTUM WIRE UNDER THE INFLUENCE OF CONFINED PHONON (FOR ELECTRON – CONFINED OPTICAL PHONON SCATTERING)

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Abstract: In this paper, we have used the method of quantum kinetic equation to calculate the analytic expression for Ettingshausen coefficient (EC) under the influence of confined phonon. We considered a quantum wire in the presence of constant electric field, magnetic field and electromagnetic wave (EMW) with assumption that electron – confined optical phonon (OP) scattering is essential. The EC obtained depends on many quantities in a complicated way such as temperature, magnetic field, frequency or amplitude of EMW and m_1, m_2 - quantum number which specify confined OP. Numerical results for GaAs/GaAsAl quantum wire (CQW) have displayed clearly the differences in comparison with both cases of bulk semiconductor and unconfined phonon. The result of examining the EC's dependence on magnetic field shows that quantum number m_1, m_2 changes resonance condition; m_1, m_2 not only makes the increase in the number of resonance peak but also changes the position of peaks. When m_1, m_2 is set to zero, we get the results that corresponds to unconfined OP.

Keywords: Confined optical phonon, Cylindrical Quantum Wire, Ettingshausen Effect, quantum kinetic equation.

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TACKLE SOME STUDENT'S PROBLEMS THROUGH EXERCISE PARADOX, SOPHISTRY IN PARTICLE KINETICS AND PARTICLE DYNAMICS

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Abstract: Teaching Physics in high schools is associated with teaching and solving exercises, thereby forming and developing for students major qualities and general competencies; at the same time, preventing and avoiding for students some common mistakes. The research works on teaching methods of Physics subject paid attention to correcting mistakes for students in solving the problem in general. This article researches and identifies some mistakes and fixes through the paradoxical exercises and the fallacy chapters of "Score Kinetics" and "Quality of the Score". Because paradox and fallacy exercises contain many factors that are contrary or inconsistent with the concepts and laws of physics. If you only look at one form, you can mistakenly think they are consistent with the concepts, laws of physics and common logic, the students will easily make mistakes.

Keywords: Exercise paradox and sophistry, Particle kinetics, Particle dynamics.

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LASER CAPTURE MICRODISSECTION

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Abstract: Such comprehensive task has been accomplished by laser capture microdissection (LCM), a powerful tool used in molecular biology and epigenetics of eukaryotes generally and plant particularly. LCM combines microscopy with laser beam technology and allows targeting of specific cells or tissue regions that need to be separated from others. There are many LCM systems with their own advantages and disadvantages regarding to distinct subjects and purposes. This essay will focus on different LCM systems and its applications on plant studies

Keywords: Laser capture microdissection (LCM), ribonucleic acid (RNA), cells, tissue.

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DIVERSITY SMALL MAMMALS FAUNA IN CHU MOM RAY NATIONAL PARK, CENTRAL HIGHLAND OF VIETNAM

Ly Ngoc Tu, Nguyen Tien Thang

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Abstract: We recorded species diversity in small mammals of Chu Mom Ray National Park (CMRNP), Kon Tum province, of the Central Highlands of Vietnam. Based on the specimens in field survey combined with data from previous publications, 64 small mammal species in 14 families and 5 orders documented in this area. Of which, *Sphaerias blanfordi*, *Cynopterus sphinx*, *Hipposideros larvatus*, *Hipposideros pomona*, *Rhinolophus affinis* are the most common species in bat fauna, *Callosciurus erythraeus*, *Maxomys moi* are the most species in rodent fauna. However, illegal exploitation, hunting and human activities effect negative to the biodiversity values. Therefore, the conservation of biodiversity is required.

Keywords: Small mammals, checklist, Chu Mom Ray National Park, Vietnam.

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DEPOSITION AND STUDY OF ALCOHOL VAPOR SENSITIVITY OF SnO₂/ZnSnO₃ THIN FILMS

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Abstract: The thin films of SnO₂/ZnSnO₃ were deposited on glass wafer substrate by a compression sprayer deposition system using Zn(CH₃COO)₂.2H₂O and SnCl₄.5H₂O as precursors. The surface of the films were treated in HCl acid solution 2% to improve their surface porosity. The influence of the surface treatment time, working temperature and alcohol vapor concentration on the sensitivity properties of the films were investigated. SEM images showed that the films treated for 60 min exhibited the best surface porosity. The phase analysis showed the presence of SnO₂ and ZnSnO₃ crystal phase on the films. The surface porosity, working temperature and alcohol concentration influenced strongly on the sensitivity properties of the films. The films with high surface porosity showed high sensitivity. The best sensitivity of the films was found on the films treated in HCl solution for 60min.

Keywords: SnO₂/ZnSnO₃ thin films, alcohol sensor, surface porosity, surface treatment

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LENGTH-WEIGHT RELATIONSHIPS OF TWO GIZZARD SHADS *CLUPANODON THRISSA* AND *NEMATALOSA NASUS* (CLUPEIDAE) IN THE NHAT LE RIVER OF CENTRAL VIETNAM

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Abstract: The length-weight relationships (LWRs) of *Clupanodon thrissa* and *Nematalosa nasus* are examined based on 140 specimens (74 *C. thrissa* and 66 *N. nasus*) collected from April to September 2018 in the Nhat Le River of central Vietnam. The LWRs of *C. thrissa* for total length (TL) and standard length (SL) are provided, which were not known earlier. The present study also provided supplementary data on LWRs of *N. nasus* in the research area. The provided LWRs of unsexed *C. thrissa* (2.9099 for TL and 2.7117 for SL) suggested an isometric growth pattern. The present study reported LWRs of unsexed *N. nasus* in central Vietnam (2.7288 for TL and 2.6284 for SL), indicating a negative allometric growth pattern.

Keywords: Shad, *Clupanodon thrissa*, *Nematalosa nasus*, length-weight relationship, Vietnam.

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APPLYING IMAGE TECHNOLOGY IN TRADITION AND CULTURE EDUCATION OF HANOI PEOPLE IN THE CONTEXT OF INDUSTRY 4.0

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Abstract: Industry 4.0 with technological achievements has a great impact on the field of life and social culture. This article focuses on the theoretical basis of the technology of image technology, the context of the 4.0 revolution and the problems posed in the application of image technology in the issue of cultural education Hanoi's traditions in order to contribute to preserving traditional and cultural values as well as international integration for Hanoi Capital in the current stage.

Keywords: Image technology.

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EVALUATION OF AGRICULTURAL DROUGHT USING LSWI, MSI INDICES: CASE STUDY IN THUAN NAM DISTRICT, NINH THUAN PROVINCE

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Abstract: *This study was applied Land Surface Water Index (LSWI) and Moisture Stress index (MSI) based on Landsat-7, Landsat-8 images data from the 2004-2016 period to observe and evaluate drought situations in Thuan Nam district, Ninh Thuan province. The results show that LSWI and MSI reflect the level of drought consistent with the drought events recorded from the ground monitoring station data in the years 2004-2005, 2015-2016. This paper proposes that LSWI, MSI can be used to monitor agricultural drought, as well as use these two indices for building drought prediction models.*

Keywords: *LSWI, MSI, agricultural drought, Thuan Nam.*

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