ABSTRACTS OF PAPERS IN ENGLISH

A FEASIBILITY STUDY TO SUPPLY DISTRIBUTED LOADS ALONG HIGH VOLTAGE TRANSMISSION LINES

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ABSTRACT

In this paper, a model is presented to simulate induced electric voltage and power from one or more conductors placed in parallel with high voltage transmission lines considering earth effect. A computer program is developed to solve the equivalent circuit and evaluate voltages and absorbed power from a unit length of the line in different positioning of conductors and in various loading effects. In a typical example one of the guard lines of a 400KV transmission line is suggested to be isolated for tapping power, and results are compared with conventional methods of supplying same loads in the same place.

GENETIC APPROACH TO POLE PLACEMENT BY STATIC OUTPUT FEEDBACK

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ABSTRACT

In this paper, a new approach for solving the problem of pole assignment, using static output feedback, has been proposed. The proposed approach is based on a genetic algorithm, that can places all the closed loop poles at desired locations with a high accuracy, provided that there exists a solution to the problem. Furthermore, solutions to a number of difficulties of static output feedback like order of system, multiplicity of the desired poles and the need for having the closed loop poles to be distinct or different from the open loop poles have been proposed. Numerical examples at the end of the paper illustrate the applicability and the performance of the proposed method.

faces and the addition of new faces.

A method is introduced for reversing the Doo subdivision to convert a fine surface into a coarse one along with the associated error. In this process, first those faces of the fine surface, which could have been produced by the contraction of a couse face in a Doo subdivision process, are found. Then these faces are expanded. Since the expanding faces are not necessarily joined properly, several candidates are usually considered for each vertex of the coarse surface. To identity the set of candidates, a graph is constructed in which any set of candidates for a vertex of the coarse surface corresponds to a connected component. To recognize the connected components, the depth first search traversal of the graph is employed. Finally, each vertex of the coarse surface is set to be the average of its corresponding candidates. The results obtained have applications in the compact representation and effective reconstruction of digital images.

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ELECTROPLATING OF Fe-Ni-Cr ALLOY WITH PULSE CURRENT

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ABSTRACT

Fe-Ni-Cr alloy coatings have appropriate corrosion resistance and passivation ability. The coating morphology and composition effect these properties. The current density is one of the effective factors in morphology and composition of alloy coatings, changing current density will cause variety in composition and properties of coatings. In case of pulse current electroplating the variety increases.

In this paper, the influences of current density and pulse parameters on composition of Fe-Ni-Cr alloy are studied. In the pulse current electroplating, the composition of alloy coatings is controlled by pulse parameters (Electronic Control). The corrosion resistance of alloy coatings (electroplating in direct and pulse procedures) is investigated and the results are compared . The pulse current causes decrease in the number of cracks of the coatings. Therefor these coatings have better corrosion resistance than direct current coatings in salt solutions.

ABSTRACT

Biosurfactants obtained from biotechnological process belong to the group of surfactants that are produced by microorganisms or enzymes. These compounds can be used as suitable substitues for chemically synthesized surfactants due to their biodegradability and renewable production sources. Economical consideration has limited the application of biosurfactants but improvement of their production technology can solve this problem.

■

SYSTEMATIC APPROACH FOR ANALYSIS OF UNIVERSITY -INDUSTRY RELATION IN IRAN

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ABSTRACT

Weakness in the university-industry relationship in Iran and relative arising problems have motivated the authors of this paper to investigate, compare and evaluate this relationship both in Iran and in the world by the use of strategic management approach.

In this paper, the university-industry relationship in Iran is investigated; meanwhile the weaknesses and strengths of related plans are presented. The first section includes a review of the university-industry relationship, in the second section, the history, situation and plans performed in Iran concerning this issue are investigated. Finally,a projection of this relationship is presented.

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NUMERICAL SOLUTION OF LINEAR AND NON-LINEAR POISSON'S EQUATION

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ABSTRACT

In this paper, the numerical solution of the following partial differential equation has been considered:

$$\frac{\partial^\Upsilon u}{\partial x^\Upsilon} + \frac{\partial^\Upsilon u}{\partial y^\Upsilon} + \frac{\partial^\Upsilon u}{\partial z^\Upsilon} = \mu u^{\Upsilon/\Upsilon}, \quad \mu = \cdot, \; \mu = \Upsilon$$

with boundary condition

$$\frac{\partial u}{\partial m} \mid \Gamma = f(x,y,z)$$

where Γ is a sphere with raduis R.

For $\mu = 0$, finite difference method is used and the approximated solution is obtained.

For $\mu = 1$, Finite Element Method is employed. It should be noted that is equation has many applications in physics and engineering.

■

MULTIRESOLUTION OF SURFACES WITH ARBITRARY TOPOLOGIES USING A REVERSE DOO SUBDIVISION SCHEME

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ABSTRACT

Determination of the reverse of a subdivision using the global least squares fitting leads to a multiresolution structure which can be considered as a semiorthogonal wavelet system. However in the construction of multiresolution surfaces having arbitrary topologies, biorthogonal wavelets are used. For reversing the subdivision of curves and tensor product surfaces, one may employ the local least squares fitting leading to a biorthogonal system. Here, multiresolution surfaces having arbitrary topologies are constructed using a local reverse Doo subdivision scheme. Using a Doo subdivision, a coarse surface is converted to a fine one. This is achieved by the contraction of coarse

STEADY STATE CHARACTERISTICS OF SANDY SOILS OF SOUTH WEST TEHRAN AND LIQUEFACTION EVALUATION OF THE AREA USING THIS CONCEPT

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ABSTRACT

In order to evaluate the liquefaction potential and steady - state characteristic of sandy soils in south west Tehran, a subsoil exploration program was planned by dividing the region to 10 zones in each zone a borehole of 20 meters deep was drilled. At every meter depth of each borehole, SPT was performed and disturbed sample was recoverd, having 200 samples in total. Laboratory tests for physical characteristics of the soils such as grain size distribution, in situ water content, maximum and minimum void ratio, specific gravity and Atterberg limits were conducted on the samples. To determine the in situ density, SPT blow counts in addition to the other physical properties of the soil were used. To be able to study the steady - state characteristics of the sandy soil of the region, soils of similar grain size distribution have been considered to have similar steady - state characteristics. Thus all sandy soils of the deposit were divided into four main types. Consolidated undrained triaxial tests were performed on these four types of sandy soils to evaluate the steady - state strength of these soils. The tests were done on the samples with relative densities as those of the site. By determination of the steady - state strength, the steady - state line for each soil type was assigned. In situ steady strength of the soils were evaluated using the in situ void ratios. Compairing the steady - state strengths of the soils with the shear stress due to an earthquake with a PGA of 0.35g, the potential of sand liquefaction and flow failure in soil layers at each zone was evaluated.

COLOR REMOVAL OF MOLASSE EFFLUENT BY WETLAND WITH FREE WATER SURFACE (FWS)

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ABSTRACT

In the recent years, the fermentation industry has expanded both in number of products prepared on a commercial scale and in capacity. The number of products has more than doubled, and the volume has had about fivefold increase. 50000 tons of molasses is being used for production of industrial alcohol in Iran. The effluent of this process has been known as a highly polluted industrial wastewater. The biological treatments can result in pollution abatement but brown color cannot be removed. Therefore a secondary treatment is required. The natural treatment systems like artificial wetlands can be used for solving this problem. This process has been considered in two different areas in Iran. The first place was Parchin where an FWS was and constructed sedges were used as aquatic plant. In the first cultivation, efficiency was approximately 35%. For the second place Isfahan, two paddies were used. One of them was irrigated with a mixture of water and wastewater (20%) and another one received only pure water as blank. During the experience, duckweed was observed in paddy with wastewater. It was demanstrated that efficiency in the first paddy was 98% but amount of production was 15% less than the blank.

CHARACTERISTICS AND APPLICATION OF BIOSURFACTANTS

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FAULT LOCATION IN POWER TRANSMISSION LINES (FREQUENCY DEPENDENT LINE PARAMETERS MODEL)

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ABSTRACT

In this paper, a new fault location algorithm in long power transmission lines is introduced. Frequency dependent line model is used as a basis for algorithm development. The suggested technique only takes advantage of post fault voltage and current samples taken at one end of the line and does not require filtering of dc offset and high-frequency components of the recorded signals, which are present during transient conditions. The idea behined the introduced algorithm is that it considers fault location as an optimization problem that can be solved by an appropriate mathematical method. Computer simulations demonstrate the accuracy of the proposed method.

INTERLAMINAR STRESS ANALYSIS IN A ROTATING COMPOSITE BEAM

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ABSTRACT

Interlaminar stresses play an important role in the delamination failure of composite structures. In this study, a Third-Order Shear Deformation Beam Theory (TSDBT) is used to analyze interlaminar stresses in a generally laminated rotating composite beam. Equations of motion are obtained by assuming a suitable diplacement field and using Hamilton's principle. Three dimensional stress field is determined by using Hooke's law and by integrating the local equations of motion. The results obtained within this theory are compared with those of a finite element analysis.

THE ELECTRODEPOSITION OF QUATERNARY Fe-Cr-Ni-Mo ALLOYS

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ABSTRACT

The electrodeposition of alloy thin films has been gained importance in recent years for its practical applicability in electronic and computer industries. The use of binary or higher alloys significantly increases the possibility of satisfying the varieties of practical requirements not met by the application of pure metals. These requirements include protective, decorative, optical and antifriction surfaces with the more recent addition of requirements such as magnetic susceptibility, coercive force and electrical conductivity.

In this research, electrochemical behavior of quaternary Fe-Cr-Ni-Mo alloy deposits was studied. Using the cyclic voltammetry the reduction potential regions were defined and then the current density - potential curves were plotted using chronopotentiometry technique. Also, the nucleation and growth mechanism of alloy deposits was studied by current - transient curves (chronoamperometry). It was observed that the deposition of the Fe-Cr-Ni-Mo alloys occurred in -1.2 V and the alloy composition was changed under more cathodic potentials. The results demonstrates that the alloy deposits are found with composition of stainless steel and magnetic thin films due to a variation of bath parameters such as current density and pH. The nucleation was instantaneous in the high overpotential with a three-dimensional growth mechanism.