УДК 664.655.041

**COMPARATIVE ANALYSIS OF ENERGY EFFICIENCYBAKING OVENS**

**G.O. Zalyaeva, A.A. Chetirin**

*Kamchatka State Technical University, Petropavlovsk-Kamchatsky, 683003*

*e-mail:* *tim.aka.geralt@mail.ru*

Criterion of efficiency estimation of existing technological lines reconstruction are defined. Analysis of energy efficiency of bakehouse ovens is carried out. Technical and economical parameters of bakehouse ovens using different kinds of fuel are estimated.

**Key words:** bakingoven, energy efficiency, units of equivalent fuel.

УДК 004.93

**RECOGNIZING OPERATORS BASED ON POTENTIAL PRINCIPLE IN
THE CONDITIONS OF HIGH DIMENSIONALITY OF TAG SPACE**

**I.K.Karimov1, S.S.Radjabov2, O.N. Mirzaev2, O.A.Daminov2**

*1Kamchatka State Technical University, Petropavlovsk-Kamchatsky, 683003;
2Institute of Mathematics and Information Technology, Tashkent, 100125*

*e-mail:* *karimov\_ik@kamchatgtu.ru*

Problems of recognizing operators model development in the conditions of high dimensionality of tag space are considered. As the reference model we used the model based on potential principle. The main distinction of the offered model is the use of threshold difference between recognizing object and class while making proximity function based on potential function. Results of experiments according to functionality assessment of studied recognizing operators are presented. Proposed operators minimize computing operations while recognizing unknown objects. It allows to applying these operators in recognizing systems development working in real-time mode.

**Key words:** pattern recognition, pattern recognition model operators, the principle of the nearest neighbor, dependence symptoms, representative sign.

УДК 621.396.946

**DATA TRANSMISSION OF VESSELS POSITIONING IN NORTHERN LATITUDES BY MEANS OF SATELLITE COMMUNICATION SYSTEMS IN CIRCULAR AND ELLIPTIC ORBITS FOR THE DECISION OF MONITORING PROBLEMS**

**A.I. Kulinich**

*Kamchatka State Technical University, Petropavlovsk-Kamchatsky, 683003*

*e-mail: hatremadn@bk.ru*

As it is impossible to transmit positioning data by means of satellite communication system INMARSAT it is necessary to make analysis to find out modern communication systems in circular and elliptic orbits.with the view of monitoring.

**Key words:** system INMARSAT, ship station, terminal of communication, satellite communication.

УДК 664.61

**CALCULATION OF AEROSOL TRANSPORT AT THE COMPANY «MAKAROV»**

**A.P. Lebedeva, M.N. Rusinov**

*Kamchatka State Technical University, Petropavlovsk-Kamchatskу, 683003*

*e-mail:* *wellsalena@mail.ru*

The work aimed to determine the possibility of using aerosol transport to support manufacturing operations at the enterprise «Makarov». Results of aerosol carrier calculation for the enterprise «Makarov» are demonstrated. Design diagram is given, necessary air flow rate and specific hydraulic power are calculated.

**Key words:** length of the area, the speed of flour, pipe diameter, air flow, specific hydraulic power.

УДК 519.6: 551.510.413.5

**METHOD OF ANALYSIS AND GAPS FILLING IN TIME SERIES OF IONOSPHERE CRITICAL FREQUENCY CONSIDERING DIURNAL VARIATION AND SEASONAL TREND**

**O.V. Mandricova1,2, N.V. Glushkova1,2**

*1Kamchatka State Technical University, Petropavlovsk-Kamchatsky, 683003;
2Institute of Cosmophysical Researches and Radio Wave Propagation,
Paratunka, Kamchatka, 684034*

*e-mail:* *nv.glushkova@yandex.ru*

*e-mail: oksanam1@mail.kamchatka.ru*

This work deals with methods and automated systems development according to parameters analysis of ionosphere critical frequency, studying of quiet (background) ionosphere trend and anomalies detection during ionospheric disturbances. A modeling and prediction method of ionospheric data is described based on combination of multiresolution analysis with autoregressive models - integrated moving average. The method allows to perform data analysis, make their prediction and sort out anomalies in ionospheric parameters resulting in periods of high solar and seismic activity in Kamchatka by forecasting error assessment. With data prediction we can also the problem of these gaps filling considering diurnal variation and seasonal trend.

**Key words:** wavelet transform, autoregressive-integrated moving average, critical frequency, anomalies.

УДК 519.6:551.51

**DETECTION OF STRONG TERRESTRIAL ENERGY GROWTH OF COSMIC RAYS BASED ON COMBINATION OF MULTIRESOLUTION ANALYSIS AND NEURAL NETWORKS**

**O.V. Mandricova1,2, T.L. Zalyaev2**

*1Kamchatka State Technical University, Petropavlovsk-Kamchatsky, 683003;
2Institute of Cosmophysical Researches and Radio Wave Propagation,
Paratunka, Kamchatka*

*e-mail: oksanam1@mail.kamchatka.ru*

*e-mail: tim.aka.geralt@mail.ru*

This work is aimed to provide tools and program systems for cosmic rays data processing and analysis and for the early identification of a strong energy increase. Based on wavelet transform and neural networks combination, we propose a technology for cosmic rays data approximation, which allows to study data structure, perform a forecast and to reveal anomalous features, occurring in the cosmic rays parameters during cosmic rays ground level enhancement Approbation of technology on the neutron monitor data (data recording station is in Moscow) confirmed its effectiveness.

**Key words:** wavelet-transform, neural networks, ionospheric parameters, solar activity.

УДК 519.6:550.38

**METHOD OF EARTH'S MAGNETIC FIELD STATE VALUE BASED ON MULTICOMPONENT MODEL**

**O.V. Mandricova1,2, I.S. Solovyev1,2**

*1Kamchatka State Technical University, Petropavlovsk-Kamchatsky, 683003;
2Institute of Cosmophysical Researches and Radio Wave Propagation,
Paratunka, Kamchatka, 634034*

*e-mail: oksanam1@mail.kamchatka.ru*

*e-mail: kamigsol@yandex.ru*

A multi-component model of the geomagnetic signal, that describes its characteristic constituents and local features, which are formed during periods of high geomagnetic activity, is proposed. Based on this model, a method of the automatic mode assessment of the Earth's magnetic field state is provided. Three states of the field are considered: 1) calm field, 2) weakly perturbed field, 3) the field perturbations. Field state value is performed by estimating parameters of the component models which define strong and weak geomagnetic field disturbances.

**Key words:** wavelet transform, magnetic storm, geomagnetic data.

УДК 621.313.333

MODELING OF ASYNCHRONOUS ELECTRIC MOTOR TEST

A.A. Marchenko, N.N. Portnyagin

*Kamchatka State Technical University, Petropavlovsk-Kamchatsky, 683003*

e-mail: роrnic1 @yandex.ru

e-mail: marchenko21@mail.ru

The model which allows to make a sharp frequency dump supplying voltage to asynchronous engine is described in the article. Capacity diagram allows us to speak about electric motor transfer to generator mode.
The method of tension reduction is theoretically justified.

**Key words**: asynchronous engine, dynamic loading, recuperative braking, generating mode.

УДК 628.1:621.311(571.66)

**PHYSICOCHEMICAL CHARACTERISTICS RESEARCH OF SOLID DEPOSITS
OF COLLOIDAL SILICA FROM HOLES, HEAT PROVIDING EQUIPMENT
AT GEOTHERMAL ELECTRIC POWER STATION**

**V.V. Potapov, G.M. Min, V.A. Gorbach**

*Kamchatka State Technical University, Petropavlovsk-Kamchatsky, Russia, 683003*

*е-mail: vadim\_p@inbox.ru*

*е-mail:* *ossora@rambler.ru*

*е-mail:* *gorvov@mail.ru*

The results of studies of physicochemical characteristics research of solid deposits of colloidal silica in holes, heat providing equipment at Verkhne-Mutnovsky and Mutnovsky geothermal power plant. Unlike corrosion samples most of solid deposits samples contain a big portion of silicon dioxide. According to X-ray diffraction spectra solids samples are amorphous material with a small proportion of quartz and other minerals. Taking into account thermochemical properties of solid deposits they resemble opal as geometrical features of DTA curves indicate. IR spectra of solids according to the location of main peaks and the ratio of their intensities are similar to standard opal spectra. According to electron microscopy data, surface sediment samples formed in sustainable mode of mass transport of colloidal particles have grainy surface composed of particles and their complexes of certain sizes and shapes.

**Key words**: hydrothermal separate, colloidal silica, mass transfer, amorphous silica, silica, thermochemical analysis, thermogravimetry, electron microscopy, X-ray picture.

УДК 519.6:681.5

**ANALYTICAL METHODS OF FUNCTIONS ARRAY TRANSFER FORMING
OF MULTIPOLAR SYSTEM WHILE SOLVING A PROBLEM
OF TECHNICAL DIAGNOSIS**

**G.A. Pjukke**

*Kamchatka State Technical University, Petropavlovsk-Kamchatsky, 683003*

*e-mail:geopyukke@yandex.ru*

The offered method is based on matrix transformations, it allows to form a range transfer functions of multipolar system which is later used as a set of basic adjusting and diagnostic attributes at construction of diagnostic and adjusting models of technical systems. On the basis of constructed models new methods of operating conditions diagnosing of ship automation condition are elaborated. Development of new diagnosing methods allows to project technical diagnosing means with new opportunities, it expands a range of engineering tasks for operating conditions maintenance of technical systems and emergencies prevention at operation in conditions of independent navigation.

**Key words:** an adjusting attribute, multipolar representation, topological the columns, the short matrix of central parameters.

УДК 664.952

**RESEARCH OF STRUCTURE REGULATING ADDITIVES INFLUENCE
ON THE STRUCTURE OF FISH MOLDED PRODUCTS**

**K.M. Afanas’eva**

*Kamchatka State Technical University, Petropavlovsk-Kamchatsky, 683003*

*e-mail:* *oleinikovaks@yandex.ru*

Quantitative and qualitative composition of structure regulating mixture for formation of fish molded products structure is jrounded. Structure regulating composition influence on fish molded products structure is analyzed. The composition consists of potato starch, soy protein isolate, dried chopped seaweed, sodium tripolyphosphate. The application of structure regulating composition based on minced fish and various structure regulating additives in the amount of 4,0% to minced fish is given proof.

**Key words:** structure regulating composition, fish molded products, potato starch, soy protein isolate, dried chopped seaweed, sodium tripolyphosphate, minced fish.

УДК 694.951.32:639.228.6

**REASONABILITY GROUNDS FOR TECHNOLOGY DESIGN OF EXPEDIENCY
OF DEVELOPMENT OF THE TECHNOLOGY OF COLD SMOKING HALIBUT
WITH PROLONGED KEEPING TIME**

**M.V. Blagonravova, K.V. Tepluk**

*Kamchatka State Technical University, Petropavlovsk-Kamchatskу, 683003*

*е-mail:* *mblagonravova@mail.ru*

Reasonability grounds for technology design of expediency of development of the technology of cold smoking fish with prolonged keeping time. Methodological and experimental approaches to prove the technology are described. Interrelation of basic operation stages and their general scheme are given. The influence of adding EDТА disodium salt into salting mix on organoleptic properties of salted halibut during storage.

**Key words:** technology, cold smoking, the halibut, the antioxidizing effect, the prolonged working life.

УДК 595.3(285.2)"2009/2011"

**BIOLOGICAL FEATURES OF BRINE SHRIMP *ARTEMIA* LEACH,
1819 IN BOLSHOE YAROVOE LAKE OF ALTAY TERRITORY**

**L.V. Vesnina, G.V. Permyakova**

*Altay branch of «Gosrybcenter» – «Altay research Institute
of aquatic living resources and aquaculture», Barnaul, 656049*

*e-mail:* *artemia@alt.ru*

The results of morphological and reproductive parameters researches of shrimp genus *Artemia* Leach, 1819 in deep-water Bolshoe Yarovoe Lake in Altay region during 2009–2011 are stated. The analysis of abiotic and biotic factors influence on them was revealed.

**Key words:** artemia, morphometric analysis, fruitfulness.

УДК 594.1:591.51(268.45)

**THE BEHAVIOR OF SVALBARD BIVALVES IN CONTROLLED CONDITIONS**

**A.V. Gudimov**

*Murmansk Marine Biological Institute of KSC of RAS, Murmansk, 183010*

*e-mail: alexgud@mail.ru*

Behavior of Svalbard bivalves was researched for the first time. Recording of behavioral responses in two clams Mya truncata and Tridonta borealis, and in the Icelandic scallop Chlamys islandica were made by a strain gage and PC in semi-natural conditions on the coast of Gren-fjord at water temperatures ranging from 0, 1, 2 to 4 ºС. Molluscs keeping conditions in aquariums were the same as in the natural habitats from which the water intake for experiments was made. Under invariable conditions mollusks behavior is stable according to the following parameters: shell gaping level, amplitude and adduction. Molluscs sensitivity and the power of behavioral reaction depend on the day time and the background level of environmental fluctuations.

**Key words:** behavior, shell gaping level, amplitude, adduction, clams, Icelandic scallop, Svalbard, semi-natural constant conditions.

УДК 582.259(571.66)

**LIGHT AND TEMPERATURE CONDITIONS INFLUENCE
ON THE ALGAE *ULVA FENESTRATA* (CHLOROPHYTA, ULVALES)
GROWTH IN LABORATORY ENVIRONMENT**

**S.O. Ocheretiana**

*Kamchatka State Technical University, Petropavlovsk-Kamchatsky, 683003*

*e-mail: sveta\_kam\_08@hotbox.ru*

Research results of green seaweed Ulva fenestrata in natural and artificial conditions are described. Plants for the experiments were collected in summer of 2011 in Avacha Bay. One part of samples was hold in the laboratory at abnormally high temperature ranging from 32–35°C with close to natural mode of lighting, the second part – at 23°C and excess lighting, and the third – at 8–10°C in full darkness. We established the accelerated ripening of reproduction occur in high temperatures. Excessive light result in cells size increase and suppresses plant cytokinetyc processes. Total darkness, on the contrary, promotes active mitotic division of vegetative cells, but prevents the formation of reproduction products.

**Key words:** algae, *Ulva fenestrata,* developmental biology, reproduction, exposure to light, the effect of temperature, Kamchatka.

УДК 597.555.5(265.53-17)

**PECULIARITIES OF BIOLOGY AND ALASKA POLLACK FISHERY
IN COASTAL WATERS OF MAGADAN REGION**

**O.V. Prikoki**

*Magadan Research Institute of Fisheries and Oceanography, 685000*

*e-mail:* *prikoki@rambler.ru*

Peculiarities of biology and Alaska pollack fishery in inland sea and territorial waters of the North-Okhotomorsk subzone within the territory of Magadan region for a long period of time are considered. Dependence of Alaska Pollack length frequency on the trawling depth and fishing areas is analyzed.

**Key words:** pollack, size structure, age structure, enclosed sea waters, coastal area.

УДК 57.089.3

Effects of temperature and sality on fertilized eggs
of ballan wrasse while incubation (*Labrus bergylta*)

**L.V. Shchepak¹, N.G. Zuravleva1, Oddvar Ottesen2 2**

*¹Murmansk State Technical University, Murmansk, 183010;
 2University of Nordland, Associate Professor of Faculty of Bioscience and Aquaculture,
Norway, Bodø 8049*

*e-mail: lakilul@rambler.ru*

*e-mail: NonnaZh@yandex.ru*

*e-mail: Oddvar.Ottesen@hibo.no*

Development of Ballan wrasse is not well described and the combined effect of environmental parameters such as temperature and salinity is not known. For better understanding of the tolerance of Ballan wrasse to various range of environmental conditions like temperature and salinity at early developmental stages, the effects of different temperature and salinity on morphometric characteristics of newly hatched larvae were examined and larvae hatching success were determined.

**Key words:** *Labrus bergylta*, aquaculture, embryonal development, larvae, effect of temperature and salinity, morphometric characteristics, hatching success.

УДК 613.96(571.66)

**EVALUATION OF EATING HABITS AND HEALTH CONDITION
OF THE UNIVERSITY STUDENTS IN KAMCHATKA**

**A.A. Klochkov**

*Kamchatka medical college, Petropavlovsk-Kamchatsky, 683032*

*e-mail: andrejklochkov@mail.ru*

The present article deals with research results concerning peculiarities of dietary intake, eating pattern, some aspects of attitude to their own health of the most socially active section of Kamchatka youth – University students. The results are obtained from multifactorial questionnaires analysis. Questionnaires included 29 questions and from 3 to 6 options of answer. This analysis enables us to detect obvious reasons which have a bad influence on these citizens health, it also accounts for reasons of noticeable age structure change with people registrated with digestive apparatus morbidity and high neglected illnesses.

**Key words**: nourishment, attitude to health, harmful habits, University students, Kamchatka.

УДК 658.16

**FINANCIAL PERFORMANCE IMPROVEMENT OF PUBLIC INSTITUTIONS
AS A FACTOR OF PUBLIC FINANCE EFFICIENCY INCREASE**

**T.A. Potapova**

*Kamchatka State Technical University, Petropavlovsk-Kamchatsky, 683003*

*e-mail: potapova\_trace@mail.ru*

Subject matter of government institutions within the scope of reformation of government-financed organization activity is defined and systematized. Proposals to enhance government institutions financial activity are made. The proposals are linked with a more precise definition of legal status and organization of financial discipline and control at government institutions.

**Key words:** public sector of economy, government institutions, financial activities of the institution, the legal status of the institution.

УДК 378:811.111

**CASE-STUDY METHOD AS THE INTENSIVE EDUCATIONAL TECHNOLOGY AT
THE CLASSES OF THE FOREIGN LANGUAGE (ENGLISH LANGUAGE;
TECHNICAL UNIVERSITY**)

**T.I. Ivanenko**

*Kamchatkа State Technical University, Petropavlovsk-Kamchatsky, 683003*

*e-mail: raduga39@mail.ru*

The article deals with the possibility of using the case-study method as the intensive educational technology and methodological innovation at the classes of the foreign language at Technical University. The use of case-study method in professional environment pursues two complimentary purposes: the further improvement of communicative competence (linguistic and social-cultural) and the formation of students’ professional characteristics. The above-mentioned method stresses the active cognitive activity of the students and requires the knowledge of the certain linguistic means.

**Key words:** case-study, educational technology, foreign language, linguistic means, information resources.

УДК 378:811.111

**TEXTS SELECTION CRITERIA FOR EFL STUDENTS
AT NON-LINGUISTIC INSTITUTIONS**

**I.D. Popova**

*Kamchatka State Technical University, Petropavlovsk-Kamchatskу, 683003*

*e-mail:* *popova2003@yandex.ru*

The competence of a modern specialist means the ability to receive important information regarding his speciality from the English written texts. That is why one of the main tasks of language teaching is to form the skill to work with literature in the original. This article deals with the role of reading in the system of professionally-oriented teaching of foreign language and texts selection criteria.

**Key words:** foreign language, professional activity, reading instruction, authenticity, reading and translation of the texts according to speciality, professionally-oriented teaching.