УДК 639.2.081.7: 681.883.4

**THE ANALYSIS AND SYNTHESIS OF LENS ANTENNA FOR SONAR**

**A.G. Abdrashitov1, A.P. Belash1, P.A. Volkov2, V.I. Korochentcev2**

*1Kamchatka State Technical University, Petropavlovsk-Kamchatsky, 683003;   
2Far Eastern Federal University, Vladivostok, 690600*

*e-mail: Abdrashitov\_AG@Kamchatgtu.ru*

*e-mail: Belash\_AP@Kamchatgtu.ru*

*e-mail: vkoroch@mail.ru*

The article presents practical problems of the focusing system synthesis and experimental validation of the designed antennas. The methods of studies are based on the mathematical apparatus of the Green function theory for the wave equations.

**Key words:** wave fields, antenna synthesis, lens antenna, directional pattern, Green functions, experimental validation.

УДК 553.411.08:546.59

**RESEARCH OF DEHUMIDIFICATION PROCESS OF QUARTZ GOLD-BEARING   
ORE LABORATORY SAMPLES IN MICROWAVE OVEN**

**O.A. Belavina, V.A. Shvetsov, D.V. Shunkin, N.V. Adelshina, P.A. Belozerov**

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

*e-mail:* [*belavina.olia@yandex.ru*](mailto:belavina.olia@yandex.ru)

*e-mail:* [*bakeev\_da@kamchatgtu.ru*](mailto:bakeev_da@kamchatgtu.ru)

*e-mail:* [*demon\_111@mail.ru*](mailto:demon_111@mail.ru)

This article presents research results of dehumidification process of quartz gold-bearing ore laboratory samples in domestic microwave oven. Dependence of samples dehumidification process quality on it’s determining factor is detected. It allows to develop optimal technological dehumidification process condition of quartz gold-bearing ore laboratory samples in domestic microwave oven.

**Key words:** microwave oven, dehumidification of laboratory samples, optimal dehumidification condition.

УДК 621.311:627.8

**PROBLEM-CHRONOLOGICAL ANALYSIS OF DNIEPER HYDROELECTRIC   
POWER PLANT CONSTRUCTION AND MAINTENANCE**

**A.A. Vasilenko1, A.A. Zhivov2**

*Kamchatka State Technical University, Petropavlovsk-Kamchatsky, 683003;   
Civil Defence Academy Emercom of Russia, Khimki district, Moscow Region, 141435*

*e-mail: ale-vasilenko@narod.ru*

*e-mail: septem-voises@mail.ru*

Carried out analysis allows to identify potential risk of hydrodynamic accident at Dnieper hydroelectric power plant and also the second radiation pollution of Dnieper water ecosystem. We revealed factors influencing on firmness of hydrotechnicalconstructions at Dnieper hydroelectric power plant. Basic research techniques are problem analysis and historical chronology.

**Key words:** Dnieper hydroelectric power plant, dam, risk, firmness.

УДК 519.6: 551.510.413.5

**DATA FORECASTING OF IONOSPHERE CRITICAL FREQUENCY BASED ON   
THE ON THE BASIS OF MULTICOMPONENT MODEL**

**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*](mailto:nv.glushkova@yandex.ru)

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

The research is aimed at the development of technologies, automated systems for studing calm (background) ionosphere motion and detecting anomalies during ionospheric disturbances. The paper describes simulation technique and forecast method of ionospheric data which is based on combination of wavelet transform with autoregressive models – integrated sliding average; this method allows us to carry out data analysis and to make prognostication. Based on the data prognostication the problem of filling in gaps in them can be solved taking into account daily and seasonal trends. Analysis of the residual prediction error allowed to identify some peculiarities associated with solar activity and arrising during strong earthquakes in Kamchatka. To evaluate the method, ionosphere critical frequency data registered at “Paratunka” (Kamchatka peninsular, IKIR FEB RAS) were used in the period from 1969 to 2011.

**Key words:** analysis of anomalies, ionosphere frequency, multicomponent simulation, wavelet transformation, autoregressive.

УДК519.6:550.38

**GEOMAGNETIC DATA ANALYSIS BASED ON THE COMBINATION   
OF WAVELET TRANSFORMATION WITH RADIAL BASIS NEURAL NETWORKS**

**O.V. Mandrikova1, 2, E.A. Zhizhikina1**

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

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

*e-mail: ekaterinazh1@mail.ru*

The article deals with method of the Earth magnetic field variations analysis (on the example of the   
H-vector), based on the combination of multiple scaling analysis with radial basis neural networks. This method allows to detect components of field variations, which characterize degree of field disturbance, to study their structure, to classify data features and to estimate field condition. On the basis of data features spacing in wavelet space statistical properties analysis is carried out, informative features are extracted. Extracted features determine radial layer of the network which specifies feature belonging to the definite class.

The method makes it possible to study subtle features of geomagnetic data structure and can be implemented as an automatic software tool for prompt state value of the Earth magnetic field condition. The method was successfully tested on basis of “Paratunka” station data. Due to this method we extracted classification features in variations fields which characterize the degree of field disturbance.

**Key words:** Earth magnetic field, wavelet analysis, neural networks.

УДК 621.311:629.5

ECONOMIC INDICATORS ESTIMATION OF SHIP ELECTRIC MACHINES REPAIR   
WITH NON-DISMOUNTABLE TROUBLESHOOTING METHODS

A.A. Marchenko

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

e-mail: MarchenckoAlexey@yandex.ru

Existing troubleshooting methods of electric machines are compared with the technique of puttingthe engine into short-term generator mode. Arguments for new troubleshooting method are proved by economic calculations.

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

УДК: 553.411.08:546.59

**THE DEGREE OF THE GOLD ORE ANALYTICAL SAMPLES REDUCTION INFLUENCE ON THE GOLD TEST RESULTS BY MEANS OF ATOMIC-EMISSIVE METHOD**

**V.V. Pahomova1, V.A. Shvetzov2, O.A. Belavina2, N.V. Adelshina2**

*1“Kamchatgeologia” open joint-stock company, Petropavlovsk-Kamchatsky, 683016;   
2Kamchatka State Technical University, Petropavlovsk-Kamchatsky, 683003*

*e-mail:* [*geolab@mail.kamchatka.ru*](mailto:geolab@mail.kamchatka.ru)

*e-mail: bakeev\_da@kamchatgtu.ru*

*e-mail:* [*belavina.olia@yandex.ru*](mailto:belavina.olia@yandex.ru)

This article covers using the gold ore analytical samples, containing 5 – 9% particles with fragmentation size + 0,071–0,2 mm, in atomic-emissive analysis. It doesn’t lead to the quality decrease of the analysis results.   
At the same time labour, time and electrical energy costs for samples preparing are approximately reduced twice.

**Key words:** atomic-emissive method, gold ore, the degree of reduction.

УДК 621.313.322-843.6:629.5

RESEARCH AND IDENTIFICATION OF OPTIMUM SHIP **DIESEL-GENERATOR SET**

S.Y. Trudnev

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

e-mail:trudnev@mail.ru

The given model allows to make a quick rise of active load on synchronous generator wires. It will allow to create dynamic disturbance in ship power system. The diagram of rpm dependence on time support our idea that unreliable part in ship system is diesel.

**Key words**: diesel, generator, reliability, loading, model.

УДК 519.8:550.8.013:553.065

**MATHEMATICAL SIMULATION PROBLEMS OF WATER-STEAM FLOWS DURING   
GEOTHERMAL DEPOSITS DEVELOPMENT**

**A.A. Chermoshentseva**

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

*e-mail: allachermoshentseva@mail.ru*

The state and prospects of geothermal resources development are studied. Hydraulic problems of water-steam mixture arising from geothermal fields development are revealed. Mathematical simulation features of water-steam flows in producing wells and terrestrial pipelines are described.

**Key words:** steam-water flow, geothermal fields, mathematical simulation.

УДК 504.61(571.66)

**THE PROBLEM OF UNAUTHORIZED DUMPS IN KAMCHATKA REGION**

**I.M. Vlasova**

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

*e-mail:* [*VlasovaIrM@yandex.ru*](mailto:VlasovaIrM@yandex.ru)

This article deals with the problem of unauthorized dumps in Kamchatka region, its main reasons and ways of solution. Summary data concerning this problem were described and analyzed. Potential risk of population health living near unauthorized dumps is given.

**Key words:** unauthorized dump of waste, unequipped dump of waste.

УДК 664.951.037.5

**AANALYSIS OF WAYS HOW TO EXTEND KEEPING TIME   
OF FROZEN FISH PRODUCTION**

**A.A. Efimov, M.V. Efimova, A.S. Archibisova, E.I. Kobzarova**

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

*e-mail:* [*efimoff-a@mail.ru*](mailto:efimoff-a@mail.ru)

*e-mail:* [*efimova-ff@mail.ru*](mailto:efimova-ff@mail.ru)

*e-mail:* [*alya\_konovalenko@mail.ru*](mailto:alya_konovalenko@mail.ru)

*e-mail:* [*lenakobzarova@rambler.ru*](mailto:lenakobzarova@rambler.ru)

The present article covers the problems and modern ways of keeping quality of frozen fish products and keeping time extension by means of different preserving ingredients. The reasons of frozen fish products quality loss while storage are given consideration to.

**Key words:** frozen fish products, freezing, storage, keeping time, oxidation, drying, preservatives.

УДК 582.272(265.52)

**DISTRIBUTION OF PROSPECTIVE RESOURSES ALONG SOUTH-EAST   
OF KAMCHATKA**

**A.V. Klimova, S.V. Ermakova**

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

*e-mail: annaklimovae@mail.ru*

Aerial photographs of Laminariales resources distribution along South-east of Kamchatka are discussed in this article. Percentage of commercial and non-commercial Laminariales in explored shelf areas is estimated. Prospective coastal areas for Laminariales production are marked.

**Key words:** Phaeophyta, Laminariales, laminarian algae, resources of seaweeds, stocks distribution, aerial photography, southeast Kamchatka.

УДК 582.273(265.5)

**A BRIEF SUMMARY OF ACTUAL RED ALGAL SYSTEMATICS**

**N.A. Pisareva1, N.G. Klochkova2**

*1Kamchatka Branch of Pacific Geographical Institute, Far East Branch,   
Russian Academy of Sciences (KB PGI) FEB RAS, Petropavlovsk-Kamchatsky, 683000;   
2Kamchatka State Technical University, Petropavlovsk-Kamchatsky, 683003*

*e-mail:* [*miranda-n@yandex.ru*](mailto:miranda-n@yandex.ru)

*e-mail: ninakl@mail.ru*

The review of red algal systematics since XIX century to present time is described in the article. Formerly their classification was based on anatomical and morphological structures, characters of growth and life histories. Recently its general methods became molecular and ultrastructural studies. Red algal taxonomic changes are discussed based on the analysis of various recent literary data. Modern classifications of these organisms based on molecular and genetic data are shown.

**Key words:** red algae, Rhodophyta, classification, molecular data, female reproductive structures.

УДК 597.552.511

**CERTAIN RESULTS OF SALMON IDENTIFICATION OF DIFFERENT ORIGIN   
AND AGE STRUCTURE DETERMINATION BY DIFFERENT METHODS**

**N.A. Rastyagaeva**

*Kamchatka Research Institute of Fisheries and Oceanography,   
Petropavlovsk-Kamchatsky, 683000*

*e-mail: rastyagaeva@kamniro.ru*

Salmon identification of different origin on the basis of otolith marking in the basin of the river Bolshoy (Western Kamchatka) is carried out. Identification of farm-raised and wild coho salmon in the lake Bolshoy Vilyui (Eastern Kamchatka) is also made. Analysis of farm-raised and wild salmon age structure by means of otoliths and scales is presented.

**Key words:** age structure, otoliths, scales, identification, comparison, farm-raised and wild salmon, the river Bolshoy.

УДК 664.8: 582.272

**PROPERTIES AND USE OF BROWN ALGAE POLYSACCHARIDE**

**V.B. Chmykhalova, E. Kuchumova, A. Shulgina**

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

*e-mail:* [*vikakgtu@mail.ru*](mailto:vikakgtu@mail.ru)

The article deals with brown algae properties and field of application. Alginates propertiesas gel forming agent and structure-forming agent are described. Brown algae drying method influence on gel forming property of filling produced with the help of algae is studied.

**Key words:** polysaccharide, brown algae, alginic acid, alginate, laminaria, fucus.

УДК [504. 61:338.484](571.66)

**TOURISM INFLUENCE ON COMPONENTS OF NATURAL ENVIRONMENT   
IN KAMCHATKA REGION**

**A.G. Chuvilin**

*Postgraduate student of Kamchatka state technical university, Petropavlovsk-Kamchatsky, 683000*

*e-mail: icarus\_2006@mail.ru*

Complex estimation of ecological tourism influence on soil cover, water bodies, vegetation and fauna of natural landscape in Kamchatka region is given.

**Key words:** [ecotourism](http://lingvopro.abbyyonline.com/ru/Search/GlossaryItemExtraInfo?text=%d1%8d%d0%ba%d0%be%d1%82%d1%83%d1%80%d0%b8%d0%b7%d0%bc&translation=ecotourism&srcLang=ru&destLang=en), landscape, [erosion](http://lingvopro.abbyyonline.com/ru/Search/GlossaryItemExtraInfo?text=%d1%8d%d1%80%d0%be%d0%b7%d0%b8%d1%8f&translation=erosion&srcLang=ru&destLang=en), water bodies, [eutrophication](http://lingvopro.abbyyonline.com/ru/Search/GlossaryItemExtraInfo?text=%d1%8d%d0%b2%d1%82%d1%80%d0%be%d1%84%d0%b8%d0%ba%d0%b0%d1%86%d0%b8%d1%8f&translation=eutrophication&srcLang=ru&destLang=en), contamination pollution of environment, wastes, [garbage](http://lingvopro.abbyyonline.com/ru/Search/GlossaryItemExtraInfo?text=%d0%bc%d1%83%d1%81%d0%be%d1%80&translation=garbage&srcLang=ru&destLang=en), [ecosystem](http://lingvopro.abbyyonline.com/ru/Search/GlossaryItemExtraInfo?text=%d1%8d%d0%ba%d0%be%d1%81%d0%b8%d1%81%d1%82%d0%b5%d0%bc%d0%b0&translation=ecosystem&srcLang=ru&destLang=en).

УДК 316.6+378

COMPONENT-INTENSIONAL OF ECONOMISTS’ABILITY   
TO MAKE ARRANGEMENTS

**G.V. Bezuglaya**

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

*e-mail:* [*bezuglaya.galina@mail.ru*](mailto:bezuglaya.galina@mail.ru)

Ability to make arrangements is a complex notion including personal and professional constituents. Personal is characterized bycorresponding reasons, personal properties – ability to act according to given situation. Professional constituent of ability to make arrangements is determined by professional properties and communication style, professional position, professional knowledge and skills of economist’s work.

**Key words:** economist, ability to make arrangements,professional properties, professionally important qualities, professional interaction, knowledge and skills, optimal functioning, controversial situation, emotional and conflict stability.

УДК 338.43:639.2

**BUSINESS PROCESSES LOGISTICS AS A TOOL FOR IMPROVING FISHERY   
STRUCTURES** **COMPETITIVENESS**

**M.Y Eremina**

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

*e-mail:* [*marina.eryomina@rambler.ru*](mailto:marina.eryomina@rambler.ru)

The paper deals with the main aspects and the importance of business processes logistics of fishery business-structures operating in conditions of uncertainty and risk which are determined by instability of external environment variables which on the one hand is not a sphere of direct influence of fishery companies management and on the other hand – dictates them a strategy and management tactics and their in-house mechanism formation.

**Key words:** business processes logistics, fishing industry, outsourcing, competitive environment.

УДК 338.43:639.2

**ADDITIONAL CHARGE IS AS INTEGRAL FACTOR OF FISHING INDUSTRY   
DEVELOPMENT**

**E.G. Mihailova**

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

*e-mail: alemi@rambler.ru*

The factors affecting the operation of fishing industry enterprise both in terms of input (resources), output (product) and production process are analyzed. Added value is considered as the target indicator taking into account fishing industry development trends concerning demand and supply factors.

**Key words:** fishing industry, added value, resource-saving technologies.

УДК 811.111ˈ373

### FAIRY TOPONYMS AS THE INDICATORS OF REAL AND UNREAL WORLD

**N.I. Reprintseva**

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

*e-mail:* [*natalie0483@mail.ru*](mailto:natalie0483@mail.ru)

The present article describes two groups of toponyms which are the indicators of unreal world. The first group includes the toponyms which are really present in the fairy tales of R. Kipling and W.M. Thackeray “The Rose and the Ring”; the second group presents the abstract objects having free interpretation included in the structure of A. Milne’s and L. Carroll’s fairy-tales.

**Key words**: toponym, abstract object, structure, meaning, nomination, geographical object, association, unreal.

УДК 94(57)

**ABOUT THE BOOK OF G.A. LEONTEVA «SERVICE CLASS IN EAST SIBERIA   
ON THE SECOND HALF OF THE** **XVIITH- FIRST QUARTER OF XVIIITH CENTURIES   
(BASED ON THE MATERIALS OF IRKUTSK AND NERCHINSK UYEZDS)»**

**N.V. Tolkacheva**

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

*e-mail:* [*tolkacheva\_nv@kamchatgtu.ru*](mailto:tolkacheva_nv@kamchatgtu.ru)

The article represents the book of G.A. Leonteva. It studies the aspects of service class formation, its activities on the example of Irkutsk and Nerchinsk uyezds, the contribution of service class to East Siberia development was also analyzed. The studies were carried out on the basis of comprehensive archival material.

**Key words:** East Siberia, service class, military organization, official staff, arms, social security, economic activities of service class.

УДК 811.111ˈ373

**THE SEMANTIC CHARACTERISTICS OF THE BRITISH   
AND AMERICAN SOMATIC PHRASEOLOGISMS**

**T.S. Chumicheva**

*English Lyceum, Petropavlovsk-Kamchatsky, 683024*

*e-mail:* [*blondtanya.78@mail.ru*](mailto:blondtanya.78@mail.ru)

The article deals with some semantic peculiarities of the somatic phraseologisms belonging to the British and American variants of the English language: the anthropocentric character of their semantics, bright imagery, evaluation, the character of the semantic structure of the polysemantic phraseologism, the role of the somatic component in the formation and motivation of their meaning.

**Key words**: phraseologism, somatism, anthropocentrism, phraseological meaning, semantic centre, symbol, Americanism, Briticism.