# List of Papers

## Topic 1

**The Influence of Physics Mechanical Properties of Rocks and a Reflection of the Mining Geological Peculiarities to Their Alteration in the Rock Mass**

11

- Владислав Попов, Юлия Несмеянова

**Performance of Classifications of Rocks on Physicomechanical and Technological Properties in an Invariant Scale**

20

- Опарин В. Н., Танайно А. С.

**Развитие на метода за частино разтоварване за ин ситу геомеханични изследвания**

29

- Веницислав Иванов, Василий Баришников

**Analysis of the Physics of the Process of Sliding of the Western Sloap of the „Open Pit Mine Tamnava - East”**

37

- Milan Stojakovic, Mihailo Petrovic

**Regularities of Water and Thermal Property Change in the Process of Rock Freezing and Their Accounting When Shft Excavating**

44

- Екатерина Й. Симановitch, Виктор С. Усенко, Георгий А. Шчербаков

**Numerical Calculation of the Connected Rock Freezing Problems (Heat Transfer- Statics) Appearing in the Process of Shaft Excavation**

53

- Анатолий Д. Смьчник, Виктор С. Усенко, Георгий А. Шчербаков

**Results of Laboratory Tests for Ultrasound Anisotropy Bridge Chains Across the Boka Kotorska Bay**

61

- Елена Мажторович, Саша Степанович, Бојан Димитријевић

**Planning of Stability Slopes in the Open Pit Mine Suvodol in Function for Minimize of the Deformities**

68

- Благоја Георгиевски, Ристо Дамбов, Татјана Уланска

**Свояства геоматерилов в условиях естественно низких температури и их влияние на эффективность горного производства**

75

- М. Д. Новопашин, А. С. Курилко

**The Forecast of Earth Surface Deformation Due to Flood of Potash Mine**

83

- А. Барякх, Н. Самоделкина, А. Потапов, П. Коносавский

**Cale Effect Manifestations in Quasi Static Rocks**

92

- А. Барякх, В. Асанов, И. Панков, В. Токсаров

**Прогнозиране на геотехнически показатели чрез многофакторен регресионен анализ**

99

- Виолета Иванова, Станислав Топалов
TOPIC 2

MOVEMENT AND DISINTEGRATION OF ROCK MASSIFS BY MINING OF MINERALS AND THE BUILDING OF UNDERGROUND AND OPENCAST EXCAVATION FACILITIES

DETERMINATION OF STRESS-STRAIN STATE OF ROCK MASSIVE CAUSED BY ACTION OF DISTRIBUTED ON ITS SURFACE LOADING
Zhuravkov M. A., Krupoderov A. V.

IMPORTANCE OF THE INTERMEDIATE PRINCIPAL STRESS EFFECT ON ROCK PHYSICAL PROPERTIES — SUGGESTION FROM LABORATORY TEST —
Manabu Takahashi, Hyuck Park, Takato Takemura

ON MONITORING OF DISPLACEMENT OF A FILL MASS UNDER ITS UNDERWORKING
V. D. Baryshnikov, V. G. Kachal’sky, and D. V. Baryshnikov

GEODYNAMIC EVENTS IN THE TASHTAGOL ÖREBODY AND ENCLOSING ROCKS
Leontiev, A. V., Miroshnichenko, N. A., Vasilieva, E. V.

MONITORING OF NATURAL-TECHNICAL SYSTEM IN THE OCTYABRSKY MINE
Tapsiev A. P., Uskov V. A.

EFFICIENT METHODS FOR FORECASTS OF STRESS STATE OF ROCK MASS AND CONSTRUCTION OF DANGEROUS ZONES IN BEDDED DEPOSITS MINING
Victor Zubkov

ESTIMATION OF THICKNESS OF LAYER SLOUGHING OF THE PIT EDGE OWING TO INFLUENCE OF CYCLIC SIGN-VARIABLE TEMPERATURE PROCESSES
Sleptsov V. I.

ABOUT USE OF THE ENERGY THEORY FOR CONSTRUCTION OF THE STRENGTH CERTIFICATE
Victor S. Usenko, Gerard A. Shcherbakov

ANALYSIS OF THE ROCK’S MASSIF WITH SYSTEM OF THE CRACKS
M. A. Zhuravkov, N. G. Chumak

ASSESSMENT OF STRESS-STRAINED STATE OF THE ROCK MASS BASED ON HIERARCHY-BLOCK CONCEPTS ABOUT EARTH CRUST STRUCTURE
Kasparyan E. V., Savchenko S. N.

STUDY OF LATERAL MOTION OF THE BELT ON THE CONVEYOR WITH A HANGING LINE
Konoplyanik I. A., Baiko A. E., Herasimovich V. M., Kozello A. V.

ЗА НЯКОИ ОТКЛОНЕНИЯ ОТ ЕНЕРГИЙНАТА ХИПОТЕЗА [1]
Емил Андонов

EXPLORATION WORKS AND RESULTS FOR DETERMINATION HYDROGEOLOGICAL AND GEOMECHANICAL PARAMETERS OF OPENPIT DRMNO INNER DUMP
Pavlović M., Babovic M., Milanovic R., Jevtic B.

CHARACTERISTIC DIAGRAM OF THE WALL OF PILLAR AND ROCK BOLTING
Julian Dimitrov

ГЕОТЕХНИЧЕСКИ ИЗСЛЕДВАНИЯ НА ГЛИНИТЕ ОТ ОТКРIVНИТЕ ХОРизонти НА “МИНИ МАРИЦА ИЗТОК” ЕАД КАТО СТРОИТЕЛНА ОСНОВА НА ОБСЛУЖВАЩИТЕ ПЪТИЩА
Виолета Иванова

ANOMALOUS PHENOMENON OF ROCK MASS DEFORMATION AND FRACTURE IN THE VICINITY OF WORKING
N. Bulychev, N. Fotieva, P. Deev

ENSURING THE SLOPES’ STABILITY OF THE NEW OXIDE DEPOSIT AT “ASAREL-MEDET” AD – A GUARANTEE FOR ITS SAFE WORK
Stoyan Christov

THE STEP-BY-STEP DEVELOPMENT OF “ASAREL” OPEN PIT REQUIRES GUARANTEEING ITS STABILITY DURING THE PERIOD OF EXISTENCE
Stoyan Christov
## TOPIC 3

### PROGNOSIS AND CONTROL OF THE STRESS STATE AND PROFILE MOVING OF EXCAVATION FACILITIES BY MINING OF MINERALS AND THE BUILDING

1. **THE ANALYSIS OF STABILITY OF BOARDS OF OPEN-CAST MINES IN 3DEC**
   Victor Zubkov, Irina Zubkova
   - 251

2. **PREDICTION OF EXTRACTION-INDUCED DISTURBANCE AROUND STOPES BASED ON IN-SITU OBSERVATIONS AND NUMERICAL MODELING RESULTS**
   Baryshnikov, V.D., Gakhova, L.N.
   - 259

3. **МАРКШЕЙДЕРСКИЙ КОНТРОЛЬ ЗА ГЕОМЕХАНИЧЕСКИМ ПРОЦЕССОМ ВНУТРЕННИХ ОТВАЛОВ ВСКРЫШНЫХ ПОРОД**
   Борис Павлович Голубко, Вячеслав Николаевич Яковлев, Иван Сергеевич Кошев
   - 267

4. **ANALYTICAL METHOD AND SOFTWARE FOR DESIGNING TUNNEL LININGS OF AN ARBITRARY CROSS-SECTION SHAPE UNDER DYNAMIC EFFECTS**
   Nina Fotieva, Sergey Sammal
   - 275

5. **ANALYTICAL DESIGN METHOD FOR PARALLEL TUNNEL LININGS OF ARBITRARY CROSS-SECTION SHAPES**
   Petr Deev
   - 283

6. **RESEARCH OF THE DUMP SLOPE LANDSLIDE AND DEFORMATION PROCESS OF THE SOUTHERN OPENCAST FLANK AT TROYANOVO-NORTH MINE**
   Pavel Karacholov, Georgi Vladislavov
   - 291

7. **ОПРЕДЕЛЕНИЕ УРАВНЕНИЯ НА МИННАТА МУЛДА ПРИ СЛОЖЕН РЕЛЕФ**
   Михаил Вълков
   - 301

8. **ОТНОСНО МУЛДАТА ПРИ ИЗЗЕМАНЕ НА НАКЛОНЕН ПЛАСТ И ПРИ НАЛИЧИЕ НА НАКЛОНЕНА ЗЕМНА ПОВЪРХНОСТ**
   Михаил Вълков
   - 309

9. **THE DESIGN OF TUNNEL LININGS OF ARBITRARY CROSS SECTION SHAPE SUBJECTED TO THE ACTION OF VERTICAL LOAD DISTRIBUTED ALONG A PART OF THE LINING INTERNAL OUTLINE**
   Andrew Sammal, Olga Solovieva
   - 315

10. **DESIGN OF PARALLEL UNDERWATER TUNNEL LININGS OF ARBITRARY CROSS-SECTION SHAPES**
    Irina Voronina
    - 323

11. **CHANGES IN PERMEABILITY OF CRACKED ROCK BY PRINCIPAL STRESS AXES ROTATION IN TERM OF CRACK TENSOR AND PERMEABILITY TENSOR**
    Takato Takemura, Manabu Takahashi
    - 331

12. **COMPUTER-ASSISTED ANALYSIS OF STRESSES AND STRAINS IN ROCKS WITH THE LABVIEW PROGRAMMING TOOL**
    Ekaterina Rubtsova
    - 339

## TOPIC 4

### CONTROL OF THE PROFILE MOVING OF EXCAVATION FACILITIES BY UNDERGROUND MINING OF MINERALS

13. **WAYS OF PREVENTION OF GAS-DYNAMIC PHENOMENA IN POTASH MINES OF THE STAROBOIN DEPOSIT**
    Prushak V.J., Zubovich V.S., Scherba T.P., Starovoitov J.V.
    - 347

14. **METHOD FOR EVALUATION OF FRACTURE DENSITY IN VARIOUSLY ORIENTED ROCK SLOPES**
    Ivan Dimitrov, Ivan Vasilev
    - 356
ANALYSIS OF THE STABILITY AND THE MOVEMENTS OF LEVELING BENCHMARKS AT RESEARCH OF DEFORMATIONS OF ENGINEERING OBJECTS BY MINE SURVEYING MEASUREMENTS
Todor Trendafilov

AUTOMATION OF RESEARCH DATA PROCESS, AND SHIFT/DEFORMATION FORECASTING OF UNDERMINED GROUND ON POTASSIUM SALT MINES OF THE VERKHINEKAMSFIY DEPOSIT
Sergey Kutovoy, Anatoliy Kataev, Petr Krasnoshchekov, Pavel Shamin

INFLUENCE OF A CONE-SHAPED FORM OF THE CUTTING HEAD OF A HEADING MACHINE ON GEOMECHANICAL CONDITION OF A MASSIF AROUND THE SOURCE OF GAS-DYNAMIC PHENOMENA
Konoplyanik A. I., Dovnar D. N., Ahmadieva L. V., Karas I. K., Dovnar V. N.

MODELS OF MOVEMENT AND DESTRUCTION OF SLOPES AND SIDES OF OPEN PIT IN MINE WORKING
Chanyshev A. I., Efimenko L. L., Podyminogin G. M.

SOME COMMENTS ON THE COMPLEX DYNAMIC MONITORING OF THE MIROVO SALT DEPOSIT
Paskaleva I., Kouteva M., Dimitrova L., Georgiev I., Nikolova Sv., Georgieva G.

ESTIMATION OF ZONAL FAILURE MODEL PARAMETERS NEAR THE OPENING IN HIGH STRESSED ROCKS ON RESULTS OF ROCK SAMPLES EXPERIMENTAL RESEARCH
Vladimir Makarov, Lyudmila Ksendzenko, Aleksandr Opanasyuk, Nikolay Opanasyuk, Viktoria Gnitienko, Andrey Golosov

TOPIC 5
DETERMINATION THE INFLUENCE OF DYNAMIC AFFECT ON THE ROCK MASS IN BLASTING, SEISMIC ACTIVITIES AND LIABLE TO BURSTING AND SUDDEN RELEASE

К ВОПРОСУ ОБЕСПЕЧЕНИЯ СЕЙСМОБЕЗОПАСНОСТИ В КАРЬЕРАХ ПРИ ПРОИЗВОДСТВЕ МАССОВЫХ ВЗРЫВОВ
Борис Несмеянов

ОПРЕДЕЛЯНЕ НА РАЦИОНАЛНИ ПАРАМЕТРИ ПРИ ТЕХНОЛОГИЯ НА СОНДАЖНО ВЗРЫВЯВАНЕ
Гергана Камбурова

ENERGY LEVEL OF ROCK MASS WITH BLOCK STRUCTURE
Savchenko S. N., Kozyrev A. A.

PREVENTION OF GAS-DYNAMIC PHENOMENA WHEN MINING IN UNDERMINED SALT ROCK MASS
S. Andreyko

ROAD STRUCTURE ACROSS A FAULT – GEOMECHANICAL MODEL AND ANCHORING
Chavdar Kolev, Martina Perikliiska

ЕФЕКТ ОТ “ПЛАВАЩА” ПЪТНА КОНСТРУКЦИЯ ПРИ ПРЕСИЧАНЕ НА РАЗЛОМ – ПРИМЕР ОТ ПРАКТИКАТА
Чавдар Колев, Мартина Периклийска

NEW SYNTHESIZING EXPLOSIVES FOR ROCK FRAGMENTATION
Radi Ganev
### TOPIC 6

**GEOMECHANICAL METHODS FOR DECISION OF ECOLOGICAL PROBLEMS IN LIQUIDATION AND RECULTIVATION OF THE MINES. ECOLOGICAL MONITORING**

459

**ASSESSMENT OF THE COMBINED ORE MINING WITH CAVING AND BACKFILING**

Anatoly Freidin, Alexander Neverov, Sergey Vasichev

461

**MONITORING OF ADDITIONAL LOAD OF THE SUPPORT UNIT MOPS IN THE CONDITIONS OF THE STARON DEPOSIT**

Scherba V. J., Antanovich N. A., Petrovsky B. I., Karaban D. K., Misnikov V. A.

470

**GEOMECHANICAL MONITORING DATA AS A BASIS FOR GEOMECHANICAL PROCESSES MODELING**

Zhuravkov M. A., Hvesenya S. S.

479

**ALTERNATIVE APPROACH TO UNDERGROUND OREBODY EXTRATION**

Anatoly Freidin, Sergey Neverov, Aleksey Bykadorov

487

**POTENTIALITY OF MONITORING SYSTEM IN MINING ACTIVITY**

Giorgio Pezzetti, Vincenzo Caci

495

**НОВА ТЕХНОЛОГИЯ ЗА РАЗРУШАВАНЕ НА МАСИВА ПРИ ПРОКАРВАНЕ НА ПОДЗЕМНИ ИЗРАБОТКИ**

Гергана Камбурова, Славчо Лазаров

504


Mihail Petrov, Lyuben Totev, Borislav Krushkin, Valery Mitkov

509

**PRESERVATION OF RIVERS FROM POLLUTING DURING THE ACTIVITY OF MINE CONCERNS FOR PRODUCTION OF COPPER ORE IN OUTDOOR MANNER**

Lachezar Tsotsorkov, Mihail Petrov

517

**BUILDING OF THE ANTI-FILTRATION SCREEN IN TWO ROWS ON THE ASAREL MEDET LTD. AREA TO RIVER ASARELSKA WITH THE USE OF BORES AND INJECTIONS**

Mihail Petrov, Lyuben Totev, Borislav Krushkin, Valery Mitkov

525

**DEWATERING EFFECTS IN FUNCTION OF INNER WASTE STABILITY ON OPEN PIT MINE DRMNO IN SERBIA**

Šubaranović T., Jakovljević I., Jocić B., Ivoš V.

533

### TOPIC 7

**GEOMECHANICAL REQUIREMENTS IN DESIGN AND EXPLOITATION OF EXCAVATION FACILITIES. ACTUALITY OF THE NORMATIVE BASE**

539

**BACK ANALYSIS OF LARGE-SCALE DESTRUCTIONS OF PILLARS AND GRAPHICAL METHOD FOR DETERMINING THE PILLAR STABILITY**

Dragomir Stefanov

541

**SUSTAINABLE MINING UNDER USAGE MODERN MACHINES IN ESTONIAN OIL SHALE MINES**

Sergei Sabanov, Irena Milashevski, Viktor Beldjajev

551

**OPPORTUNITIES FOR OPTIMIZATION OF THE PIT EDGES OF “ELLATZITE” COPPER MINE**

Vesselin Vassilev

557

**STUDY OF A LOADING PROCESS OF BROKEN POTASH ORE BY THE SCREW CUTTING HEAD**

Zajats I. M., Konoplyanik A. V., Rohouski A. M., Prushak D. A.

568

**NUMERICAL MODELING OF THE EVOLUTION OF THE STATE OF A ROCK MASS WITH A CAVITY UNDER THE ACTION OF EXTERNAL LOAD**

Stanislav Stazhevsky, Guil Nam Khan, Evgeny Rusin

577
GEOMECHANICAL PROBLEMS AND SOLUTIONS IN TUNNEL CONSTRUCTION ACCORDING TO THE PRACTICE OF GEOTECHMIN LTD
Angel Tomov, Nikolay Zhechev 583

WELL-BLOCK CALCULATION SYSTEM FOR POTASSIUM MINING
Aliaxei Voitsik, Aliaxei Stasheuski 592

ROOM AND PILLAR EXTRACTION TECHNOLOGY IN GYPSUM MINE OF KOSHAVA
K. Georgiev, V. Parushev, N. Nikolaev 599

GEOMECHANICAL ASPECTS IN METROPOLITAN RAILWAY TUNNELS CONSTRUCTION USING THE MINING METHOD
Nikolay Zhechev 606

USING SLAG FOR FOUNDATION BED OF ROAD STRUCTURES
Valentin Nikolov 614

MODELING OF GEOMECHANICAL PROCESSES IN BURST-DANGEROUS ORE DEPOSITS OF THE FAR EASTERN REGION
I. Rasskazov, M. Potapchuk, B. Saksin, V. Miroshnikov 619

COMBOUND METHOD OF APPROACH FOR ASSESSMENT OF STRENGTH CONDITIONS OF DISTURBED ROCK MASS
Nikolay Nikolaev, Veliko Parushev 628

FORMATION OF TENSILE FRACTURES IN CONDITIONS OF STRESS CONCENTRATION UNDER COMPRESSION
Sergey Suknev 638

ФУНДИРАНЕ НА НИСКОЕТАЖЕН ЖИЛИЩЕН КВАРТАЛ В ПРОПАДАЧНИ ПОЧВИ
Елена Демирева 646

ГЕОМЕХАНИЧНИ АСПЕКТИ НА КАМЕРНО-СТЪЛБОВА СИСТЕМА НА РАЗРАБОТВАНЕ И ВЪЗМОЖНОСТИ ЗА ПОДОБРЯВАНЕ НА НЕЙНАТА ЕФЕКТИВНОСТ
Георги Михайлков, Георги Трапов, Кольо Колев, Сергей Боянов 654

MASS SLIDE AS A RESULT OF INADEQUATE INNER DUMP SANATATION AT THE FIELD B OPEN PIT MINE – MINING BASIN KOLUBARA
Petrovic B., Stepanovic S., Radisavljevic Z. 665

GEOTECHNICAL LOCATION ANALYSIS OF WATER WELL GROUP FOR SUPPLY OF THE STANARI THERMAL POWER PLANT
Loncar S., Subaranovic T., Ilic S. 670

A FUNCTIONAL CONNECTION BETWEEN FORMATION AND ARRANGEMENT OF WASTE DUMP
Saša Ilić, Jelena Majstorović 676

TOPIC 8

EDUCATION AND QUALIFICATION OF GEOMECHANICAL EXPERTS 681

LESSONS LEARNT FROM THE SGORIGRAD AND STAVA DISASTERS
Graziano Lucchi, Giovanni Tosatti 683

EDUCATION IN MINE WASTE ENGINEERING: THE EXPERIENCE OF “SIGEO” MASTER
Lucia Simeoni, Giovanni Tosatti, Alberto Bellin, Massimiano Bucchi, Renato Lancellotta, Luigi Mongiovi, Andrea Montefusco, Maurizio Pellegrini, Marco Tubino 691

ПРОБЛЕМИ ПРИ ОБУЧЕНИЕТО И РЕАЛИЗАЦИЯТА НА СПЕЦИАЛИСТИ ПО ГЕОМЕХАНИКА
Кръстю Дерменджиев 699

SYSTEM FOR VIDEO-SEMINARS AND OPPORTUNITIES FOR ITS APPLICATION IN TEACHING
Stefka Dimitrova, Deyan Lyubenov, Julian Dimitrov, Yuliyan Lyubenov 705