

# **XII International Conference on Solar-Terrestrial Relations and Physics of Earthquake Precursors 2021**

EPJ Web of Conferences Volume 254 (2021)

Paratunka, Russia  
27 September - 1 October 2021

**Editors:**

**Alexei Dmitriev  
Gleb Vodinchar  
Zafar Rakhmonov**

ISBN: 978-1-7138-3893-7

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

This work is licensed under a Creative Commons Attribution 4.0 International License. License details:  
<http://creativecommons.org/licenses/by/4.0/>.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2021)

For additional information, please contact EDP Sciences – Web of Conferences at the address below.

EDP Sciences – Web of Conferences  
17, Avenue du Hoggar  
Parc d'Activité de Courtabœuf  
BP 112  
F-91944 Les Ulis Cedex A  
France

Phone: +33 (0) 1 69 18 75 75  
Fax: +33 (0) 1 69 28 84 91

[contact-edps@webofconferences.org](mailto:contact-edps@webofconferences.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

<b>ANNUAL VARIATION OF ATMOSPHERIC ELECTRICITY DIURNAL VARIATION MAXIMUM IN KAMCHATKA .....</b>	<b>1</b>
<i>Smirnov Sergey</i>	
<b>DEVELOPMENT OF A SUBSTORMS CATALOG INCLUDING THE MPB OBSERVED AT PANAGJURISHTE STATION, BULGARIA .....</b>	<b>6</b>
<i>Guineva Veneta, Werner Rolf, Lubchich Andris, Atanassov Atanas, Bojilova Rumiana, Raykova Lyubomira, Valev Dimitar, Despirak Irina</i>	
<b>LIDAR FOR ATMOSPHERIC TRANSPARENCY MONITORING .....</b>	<b>15</b>
<i>Shevtsov Boris, Bychkov Vasily, Perezhogin Andrey, Seredkin Ilya</i>	
<b>MID-LATITUDE EFFECTS OF “EXPANDED” GEOMAGNETIC SUBSTORMS: A CASE STUDY.....</b>	<b>21</b>
<i>Guineva Veneta, Despirak Irina, Werner Rolf, Bojilova Rumiana, Raykova Lyubomira</i>	
<b>OBSERVATIONS OF RESONANT SCATTERING IN THE THERMOSPHERE AND UPPER MESOSPHERE IN THE WINTER SEASON OF 2021 .....</b>	<b>31</b>
<i>Bychkov Vasily, Seredkin Ilya, Dmitriev Alexei</i>	
<b>A NEW QUANTUM MODEL OF THE MAGNETIC FIELD OF THE HOT EARTH, MOON AND TERRESTRIAL PLANETS.....</b>	<b>38</b>
<i>Kuznetsov Vladimir</i>	
<b>ANALYSIS OF MANIFESTATION OF JOINT ACOUSTIC AND ELECTRIC RESPONSES OF NEAR-SURFACE SEDIMENTARY ROCKS ON THE DEFORMATION BY EARTHQUAKE SEISMIC WAVES IN THE SOUTH OF KAMCHATKA.....</b>	<b>53</b>
<i>Mishchenko Mikhail, Rulenko Oleg, Marapulets Yuriy</i>	
<b>ANALYSIS OF THE FEATURES OF THE SPATIO-TEMPORAL DISTRIBUTION OF GEOELECTRIC INHOMOGENEITIES IN THE EARTH’S CRUST AND SEISMIC EVENTS.....</b>	<b>61</b>
<i>Bataleva Elena</i>	
<b>APPLICATION OF ADAPTIVE WAVELET THRESHOLDING TO RECOVERY GEOACOUSTIC SIGNAL PULSE WAVEFORMS.....</b>	<b>67</b>
<i>Lukovenkova Olga</i>	
<b>CHARACTERISTICS OF THE CATALOGUE ACCORDING TO THE KNET NETWORK (NORTHERN TIAN SHAN).....</b>	<b>74</b>
<i>Sycheva Naylya, Sychev Vladimir</i>	
<b>GENERATION OF EQUATIONS FOR SHELL MODELS OF TURBULENCE IN THE MAPLE SYSTEM.....</b>	<b>85</b>
<i>Feshchenko Liubov, Vodinchar Gleb</i>	
<b>INVESTIGATION OF ACOUSTIC FIELDS IN THE ARCTIC ZONE WITH UNEVEN ICE COVER.....</b>	<b>96</b>
<i>Korochentsev Vladimir, Wenjian Nhen, Petrosyants Victor, Lobova Tatiana, Shpak Julia</i>	
<b>INVESTIGATION OF ELECTROMAGNETIC FIELDS IN THE ARCTIC ZONE WITH UNEVEN ICE COVER.....</b>	<b>103</b>
<i>Korochentsev Vladimir, Syue Vey, Gorovoy Sergey, Chernenko Vasily, Em Artem, Tagaev Timur</i>	
<b>MONITORING OF IONOSPHERE AND MAGNETOSPHERE PLASMA AND HIGH ENERGY CHARGE PARTICLE FLUXES IN MULTI-SATELLITE MEASUREMENTS IN WIDE RANGE OF ALTITUDES.....</b>	<b>110</b>
<i>Osedlo Vladislav, Abanin Oleg, Vlasova Natalia, Éalegaev Vladimir, Pavlov Nikolay, Petrov Vasilii, Podzolko Mikhail, Rubinstein Ilya, Svertilov Sergey, Tulupov Vladimir, Shemukhin Andrey</i>	
<b>MONITORING OF PHYSICAL PROCESSES IN UPPER ATMOSPHERE, IONOSPHERE AND MAGNETOSPHERE IN IONOSPHERE SPACE MISSIONS .....</b>	<b>120</b>
<i>Petrukovich Anatoly, Īgilevskii Mikhail, Kozlov Igor, Pulinetz Sergey, Dobrolenskii Yurii, Anufreichik Konstantin, Chugunin Dmitrii, Nazarov Vladimir, Abbakumov Aleksandr, Éuznetsov Vladimir, Àndrievskii Stanislav, Mikhatlov Yurii, Panasyuk Mikhail, Sver</i>	
<b>OPERATION OF A MULTI-FREQUENCY PARAMETRIC SIDESCAN SONAR IN AN ICE WAVEGUIDE.....</b>	<b>142</b>
<i>Pivnev Petr, Tarasov Sergey, Jianjun Zhu, Voronin Vasily</i>	
<b>REGISTRATION OF SYNCHRONOUS GEOMAGNETIC PULSATIONS AND PROTON AURORA DURING THE SUBSTORM ON MARCH 1, 2017 .....</b>	<b>148</b>
<i>Varlamov Ilya, Parnikov Stanislav, Ievenko Igor, Baishev Dmitry, Shiokawa Kazuo</i>	

<b>SIMULTANEOUS LITHOSPHERIC-ATMOSPHERIC SIGNALS OF ACOUSTIC EMISSION AT “KARYMSHINA” SITE IN KAMCHATKA .....</b>	<b>155</b>
<i>Larionov Igor, Marapulets Yuriy, Mishchenko Mikhail</i>	
<b>STUDY OF CHAOTIC AND REGULAR MODES OF THE FRACTIONAL DYNAMIC SYSTEM OF SELKOV .....</b>	<b>165</b>
<i>Parovik Roman, Rakhmonov Zafar, Zunnunov Rakhim</i>	
<b>THE MODES OF MAGNETIC FIELD GENERATION IN A LOW-MODE MODEL OF Á- DYNAMO WITH Á-GENERATOR VARYING INTENSITY REGULATED BY A FUNCTION WITH AN ALTERNATING KERNEL .....</b>	<b>171</b>
<i>Sheremetyeva Olga V., Godomskaya Anna N.</i>	
<b>THE SOURCE PARAMETERS OF EARTHQUAKES OF BISHKEK GEODYNAMIC PROVING GROUND (NORTHERN TIEN SHAN) .....</b>	<b>181</b>
<i>Sycheva Naylya</i>	
<b>UNIVERSAL DYNAMO PARADIGM FOR SOLAR ACTIVITY, HIGGS FIELDS AND DISASTERS .....</b>	<b>194</b>
<i>Shevtsov Boris</i>	
<b>VECTOR OVERHAUSER MAGNETOMETER POS-4: EXPERIENCE AND PROSPECTS OF APPLICATION .....</b>	<b>204</b>
<i>Khomutov Sergey Y., Sapunov Vladimir A., Denisov Alexey Y., Borodin Pavel B., Kudin Dmitry V., Sidorov Roman V., Bebnev Alexey S., Cherepanova Tatyana A., Kotikov Andrey L., Kanonidi Konstantin K., Turbin Yury G., Baryshev Pavel E.</i>	
<b>APPLICATION OF THE RICCATI HEREDITARY MATHEMATICAL MODEL TO THE STUDY OF THE DYNAMICS OF RADON ACCUMULATION IN THE STORAGE CHAMBER .....</b>	<b>221</b>
<i>Tverdyi Dmitriy, Parovik Roman, Makarov Evgeniy, Firstov Pavel, Alimova Nazira</i>	
<b>APPLICATION OF SPACED SYSTEM OF LASER INTERFEROMETERS AND TILTMETERS FOR SHARING THE EARTHQUAKES PRECURSORY EVENTS .....</b>	<b>226</b>
<i>Dubrov Mstislav, Volkov Victor, Larionov Igor, Mrlina Jan, Polak Vaclav, Aleksandrov Dmitriy</i>	
<b>ESTIMATION EARTHQUAKE OCCURRENCE PROBABILITY IN KAMCHATKA REGION BASED ON SEISMOLOGICAL AND COMPLEX OF IONOSPHERIC PRECURSORS .....</b>	<b>237</b>
<i>Boganov Vadim, Pavlov Aleksey</i>	
<b>ON THE DYNAMICS OF THE ELECTROMAGNETIC PARAMETERS OF THE NORTHERN TIEN SHAN LITHOSPHERE .....</b>	<b>247</b>
<i>Bataleva Elena</i>	
<b>Author Index</b>	