

2020 3rd International Youth Scientific and Technical Conference on Relay Protection and Automation (RPA 2020)

**Moscow, Russia
22 – 23 October 2020**



**IEEE Catalog Number: CFP20RPA-POD
ISBN: 978-1-6654-0464-8**

**Copyright © 2020 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP20RPA-POD
ISBN (Print-On-Demand):	978-1-6654-0464-8
ISBN (Online):	978-1-6654-0463-1

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
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

Table of Contents

A. Evdakov, Yu. Kutumov, T. Shadrikova, V. Shuin	A research of digital directional current protection devices operation stability in transient modes during single phase to earth faults in 6-10 kv networks with isolated neutral point	7
Yu. Kutumov	A research of operation stability of overhead transmission lines' relay protection algorithms, which are based on travelling wave principle	23
A. Voloshin, E. Voloshin, A. Kovalenko, S. Danilov, V. Sazanov	System for automatic calculation of relay protection set points	45
N. Batseva, J. Foos	The application of modified gausse-newton method for improving accuracy of regime parameters state estimation and control action adjusment in the centralized emergency control system	58
A. Voloshin, E. Voloshin, A. Kovalenko, S. Danilov, D. Degtyarev	Development of an algorithm for generating the equivalent power system according to pmu	79
A. Voloshin, E. Voloshin, S. Shapkin, A. Alekseeva, E. Rogozinnikov	Distributed optimization of power system with multiagent technologies	95
A. Ententeev, A. Voloshin, E. Voloshin, D. Serov, A. Ivanov, S. Usachev	Development of a power converter control system for increasing system stability after an emergency in distributed networks	108
S. Piskunov, A. Mokeev	Application of synchrophasor measurement To restore the secondary current of the saturated current transformer	120
S. Kostyukova, V. Peisel, A. Stepanova	Identification of the parameters of the pi circuit of the power transmission line	132
E. Khakimzianov, M. Simonova, R. Galiev, A. Sharipova	Investigation of a voltage transformer in conditions of thunderstorm activity	143
B. Safronov, A. Voloshin, A. Ivanov, A. Ententeev, S. Usachev	Information support systems of electric power industry personnel based on augmented reality technology	158
S. Yolkin, E. Kolobrodov, T. Klimova	Laam complex realization issues with using of pmu's data	170
N. Batseva, V. Sukhorukov, E. Gavrilov	Permissible power flows identification for the stability margin monitoring system based on the adaptive heavy-loaded trajectory	179

A. Voloshin, D. Serov, S. Vasilev	Cyber-physical model for the internet of energy technology testing	199
K. Petrov, A. Popov, I. Goryachevsky, S. Piskunov, D. Ulyanov, I. Yudin	Distributing network automation to increase the reliability power supply to consumers	212
E. Voloshin, S. Danilov, D. Degtyarev	Development of an intelligent control system for grounding blades and operational blocking of disconnectors	228
V. Revyakin, S. Pletnev, T. Klimova	Using the fourier transform of the half-cycle to enhance the application of the pmu	242
M. Danilov, K. Butin, A. Rodionov, A. Popov	Improving the efficiency and performance of calculations in the analysis of low-frequency oscillations	256
P. Zvada, R. Zvezdilin, M. Ilinykh	The technology of testing protection devices in a cycle according to the dommel algorithm based on the simulation of elements of electrical networks in a real-time controller	269
N. Bespalko	Blocking of control of the circuit breaker in the presence of a dangerous aperiodic component in the total current of the circuit breaker	280
T. Klimova, O. Nikolaeva	Functioning of the synchronous generator automatic excitation controller with various input signals to frequency based stabilization channels	314
P. Avdonin, T. Klimova	The possibility of using phasor measurement units for the distance determination to the disturbance point	328
V. Fyodorova, V. Kirichenko, G. Glazyrin	Development of digital device for automatic switching into network of educational power station generators	354