

SBSE 2018

VII SIMPÓSIO BRASILEIRO
DE SISTEMAS ELÉTRICOS
12 a 16 de maio de 2018
NITERÓI-RIO DE JANEIRO



PROGRAMAÇÃO DAS APRESENTAÇÕES ORAIS

14 de maio de 2018 – 11h00min às 12h30min

DI – Distribuição de Energia Elétrica

SALA: INGÁ

Chairs: Leonardo Willer de Oliveira (UFJF) e Renan Silva Maciel (UTFPR)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 475 | Curve Fitting Analysis of Distribution Fuse Links Using the Cross-Validation Technique |
| 86 | Probabilistic Evaluation of Voltage Control and Reactive Power Techniques with Photovoltaic Distributed-Generation |
| 76 | Analysis of the VHF Radio Signal Coverage in the Environment of a Non-Urban Feeder for Emergency Attendance of Occurrences |
| 276 | Energy Storage System Specification and Allocation for a Distribution System with Distributed Generation |
| 137 | Evaluation of Ohmic Losses in Medium Voltage Feeders in the Presence of Distributed Generation |
| 285 | Analysis of the Distributed Generation for the Voltage and Reactive Power Control in Modern Distribution Systems |

ATI – Engenharia de Alta Tensão

SALA: ITAIPU

Chairs: Maria Cristina Dias Tavares (UNICAMP) e Thales Terrola e Lopes (UFF)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 18 | Integrated Vacuum Circuit Breaker Model for Opening and Closure Switchings |
| 25 | Study of the Criticality of Internal Voids in Polymeric Insulators with 15 kV Voltage Class |
| 33 | The Impacts of Distributed Generation Growth on Industrial Systems Protection Schemes: Short Circuit, Coordination, Selectivity and Arc Flash Studies |
| 43 | Dynamic Voltage Distribution Analysis Applied to a Polymer Insulator Chain |
| 93 | A Review of Applications of DCB in Electric Power Transmission Substations |
| 167 | Influence of Harmonics on the Electromechanical Stresses in a Power Transformer |

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14 de maio de 2018 – 11h00min às 12h30min

ICI – Inteligência Computacional Aplicada a Sistemas Elétricos

SALA: NITERÓI

Chairs: Alexandre Rasi Aoki (UFPR) e André Abel Augusto (UFF)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 41 | Allocation and Analysis of TCSC in Electric Power System Using Optimal Reactive Power Flow |
| 49 | Transmission Network Expansion Planning Using Spectral Clustering |
| 62 | Islanding Detection in Distributed Generation using Supervised Learning Techniques |
| 116 | Optimal Allocation of Photovoltaic Panels in Distribution Network Applying Genetic Algorithm |
| 494 | Voltage Control in Microgrids with Minimum Adjustment in Distributed Generation Units |
| 122 | Evaluating the Performance of an Artificial Bee Colony Algorithm for Solving a Economic Dispatch Problem |

TI – Transmissão de Energia Elétrica

SALA: FLECHAS

Chairs: Sérgio Gomes Jr. (UFF/CEPEL) e Thiago J. M. Antunes Parreiras (CEPEL)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 38 | Efficient Method to Mitigate Transmission System Overloads Through Line Switching Considering Search Space Reduction |
| 462 | Critical Fault Analysis on Half-Wavelength Transmission Lines |
| 81 | Critical Analysis of the Transmission Systems Expansion Planning Problem Considering Multiple Generation Scenarios |
| 337 | Multi-Start Metaheuristic for Transmission System Expansion Planning Using a Transportation Model |
| 117 | Fault Detection and Localization for HVDC Transmission Lines |
| 131 | Using Incremental Replica Current in Phase Comparison Transmission Line Protection Schemes: Advantages and Limitations |

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14 de maio de 2018 – 11h00min às 12h30min

NTI – Novas Tecnologias e Materiais

SALA: ICARAÍ

Chairs: Rubens de Andrade Jr. (UFRJ) e Daniel Henrique Nogueira Dias (UFF)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 11 | Influence of the Transmission Line Model in Determining PLC Channel Capacity in Narrow-Band Applications |
| 135 | Traditional Photovoltaic System and Hybrid Photovoltaic System: a comparative study for a residence |
| 144 | Analysis of Rotating Field and Induced Current Density in Synchronous-Hysteresis Superconducting Machine |
| 267 | Computational Modelling of Heat Transfer in a Porcelain-Housed Surge Arrester |
| 177 | A Hysteresis Model for Power Ferrite |
| 179 | An International Overview of Frequency Inverter Technologies applied to Networked Photovoltaic Power Generation Systems using Patent Bases |

MI – Modelagem e Simulação de Sistemas Elétricos

SALA: H REAL + NOBRE

Chairs: Antônio Carlos Zambroni de Souza (UNIFEI) e Márcio A.R. Guimaraens (UFF)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 361 | Segmentation Issues in a Horizontal Buried Cable Considering Frequency Dependent Soil Models |
| 277 | Modeling the Terminal Impedance of Power Transformers for Studies of Fast Front Electromagnetic Transients |
| 52 | Operating Reserve Requirements and Equipment Ranking in Systems with Renewable Sources |
| 56 | A Method to Compute Flexible Static Equivalents for Very Large Power Networks |
| 65 | Proposition and Validation of Full-Order Wideband Models of Two Single-Phase Distribution Transformers of Different Power Ratings |
| 69 | Impact of receding horizon length under MBPC applied to DFIG based wind turbine |

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14 de maio de 2018 – 11h00min às 12h30min

PI – Planejamento e Regulação

SALA: BAIA

Chairs: Bruno Henriques Dias (UFJF) e Bruno Soares Moreira Cesar Borba (UFF)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 496 | Analysis of AC Resistance Model of Steel-Cored Conductors on Transmission Lines Ampacity |
| 444 | New approaches in street lighting maintenance: The case of Natal, Brazil |
| 83 | Impact of clustering techniques in technical planning and operation methodology of micro and mini distributed generation units |
| 101 | Multi-objective siting and sizing decision model of distributed generation for distribution networks |
| 133 | Analysis of the Typology of Load Curves based on Data Classification Methods |
| 170 | A Multiobjective Data Envelopment Analysis Model Applied to the Evaluation of Brazilian Electrical Distributors |

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14 de maio de 2018 – 14h00min às 15h30min

EEI – Eficiência Energética e Qualidade de Energia Elétrica

SALA: INGÁ

Chairs: Marcio Zamboti Fortes (UFF) e Thales Terrola e Lopes (UFF/ELETOBRAS)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 108 | Switching Electronic Charges: Analysis of the Reactive Energy Flow and the Performance as an Active Filter |
| 383 | Proposal of Changes on Brazilian's Energy Efficiency Programs to Maximize the Return of Investments |
| 22 | Performance Evaluation of Unbalance Sharing Responsibility Procedures |
| 50 | Industrial Demand Management Considering Distributed Generation and Differentiated Rates in Time |
| 57 | Comparative Analysis between Harmonic Distortion Mitigation Techniques Produced by Wind Power Inverting Units |
| 64 | Lighting Retrofit using LED Technology – Efficiency Analysis and Environmental Impacts |

GI – Geração de Energia

SALA: ITAIPU

Chairs: Luis Henrique Lopes Lima (UFJF) e Bruno Soares Moreira Cesar Borba (UFF)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 507 | Cross checking methodology using Openwind for standard uncertainty in the long-term annual energy production estimate for P90, in an inner area of Bahia, Brazil |
| 130 | A Load Frequency Control Approach for Systems with Predominance of Wind Generation |
| 151 | Modeling and Experimental Analysis of a Didactic Prototype Stirling Engine |
| 233 | An Algorithm for Optimized Cascade Operation of Reservoirs |
| 288 | Analysis of Economic Return of The Installation of Photovoltaic Panels at The Campus of The Federal University of Itajubá |
| 28 | Analysis of Multiple Solutions in The Calculus of Firm Energy |

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14 de maio de 2018 – 14h00min às 15h30min

IC2 – Inteligência Computacional Aplicada a Sistemas Elétricos SALA: NITERÓI

Chairs: Osvaldo Ronald Saavedra (UFMA) e Bruno Henriques Dias (UFJF)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 156 | Use of RNA for Identification of Consumers with Irregular Electrical Installations |
| 209 | Coordination of Inverse-Time Overcurrent Relays with Fuses using Genetic Algorithm |
| 221 | Optimized Setting of Directional Overcurrent Relays via Genetic Algorithm |
| 225 | Transmission Expansion Planning with Wind Sources Based on Constructive Metaheuristics |
| 256 | Optimization of Distribution Network Topology with Genetic Algorithms in GIS Environment |
| 359 | Optimization of the Relay Parameterization in Radial Distribution Systems Using Genetic Algorithm |

RII – Redes Elétricas Inteligentes SALA: FLECHAS

Chairs: Jose Luiz Rezende Pereira (UFJF) e Paulo Fernando Ribeiro (UNIFEI)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 14 | Techno-economic study of a grid-connected Photovoltaic system in Unifei's Nicola Tesla building |
| 42 | Optimal Restoration Switching Sequence in Smart Distribution Networks |
| 152 | Smart Grid educational resources for the undergraduate student |
| 192 | Fault Section Location in Smart Grid using Smart Switches |
| 269 | Substation Security Mechanism based on SDN and MMS |
| 391 | Electric Vehicles as Motivators for Smart Grids |

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14 de maio de 2018 – 14h00min às 15h30min

OMI – Operação e Manutenção de Sistemas de Energia

SALA: BAIÁ

Chairs: Shigeaki Leite de Lima (UFMA) e Hélio de Paiva Amorim Jr. (CEPEL)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 104 | Power Transformer Risk Management: Predictive Methodology Based on Reliability Centered Maintenance |
| 136 | Transient Stability Analysis of a Small Synchronous Generator with Uncertainties in Mechanical Power |
| 143 | Maintenance Scheduling of Distribution Networks Based on Reliability Indices |
| 155 | Special Protection Systems' Automatism by Security Regions |
| 200 | A Robust Maintenance Management of Transformers Considering Uncertainties in Fault Data |
| 199 | Use of decision tree algorithms to diagnose incipient faults in power transformers |

EPI – Eletrônica de Potência

SALA: ICARAÍ

Chairs: José Andres Santisteban Larrea (UFF) e Luís Fernando Corrêa Monteiro (UERJ)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 19 | Development of a multilevel converter for power systems applications based on DSP |
| 26 | A Comparison Between Two Single-Phase Static Compensator Methodologies – PQ Theory and State Feedback |
| 159 | Vector Control of Single-Phase Induction Motor |
| 201 | Performance Enhancement of a Single-Phase Series Active Filter by use of Cascade Control Loops |
| 279 | Hoist Crane Electrical Optimization Using a Field Weakening Vector Control Frequency Drive |
| 508 | Low-Cost IGBT Driver for Single-Phase Full-Bridge Converter |

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14 de maio de 2018 – 14h00min às 15h30min

M2 – Modelagem e Simulação de Sistemas Elétricos

SALA: H REAL + NOBRE

Chairs: Renan Silva Maciel (UTFPR) e Felipe Sass (UFF)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 437 | Analysis in the Parameterization of the Inductances and Resistance of the Rotor of a Three Phase Induction Motor using Finite Elements Method |
| 78 | Proposal and Evaluation of an Adaptive Underfrequency Load Shedding Method |
| 92 | Optimal Allocation of Distributed Generation in a Radial Distribution Network for Losses Reduction and Voltage Profile Improvement |
| 95 | Influence of Active Overexcitation Limiters on Power System Transfer Capability |
| 107 | FPGA Based Real-Time Model of Three-phase Induction Machine |
| 123 | Influence of Insulating Layer and Proximity Effect in Overhead Line Capacitance Matrices |

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15 de maio de 2018 – 08h30min às 10h00min

D2 – Distribuição de Energia Elétrica

SALA: INGÁ

Chairs: Jose Luiz Rezende Pereira (UFJF) e Renan Silva Maciel (UTFPR)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 297 | Equivalent Operational Impedance: A new Approach to Calculate Technical and Non-Technical Losses in Electric Distribution Systems |
| 157 | An exact Optimization Strategy for the Restoration Problem in Radial Distribution Systems with Switches Allocated in a Reduced Number of Circuits |
| 180 | Minimization of the Impacts Caused by Distributed Generation to the Electric System by Exploring the Reactive Control Range of Solar Inverters |
| 332 | A Methodology for the Analysis of Technical Feasibility of Distribution Networks Parallelism |
| 206 | Optimization of Distribution Generation Systems for Minimum Losses Considering Capability Curves |
| 326 | Fault Location Using Modern Fault Indicators in the Presence of Distributed Generation |

M3 – Modelagem e Simulação de Sistemas Elétricos

SALA: H REAL + NOBRE

Chairs: João Alberto Passos Filho (UFJF) e Thiago Trezza Borges (UFF/PETROBRAS)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 402 | A Full Newton Approach to Consider Reactive Power Generation Limits in Power Flow Problem Using Sigmoid Switches |
| 127 | Analytical and Computational Study of the Inductance in a Power Reactor |
| 249 | Virtual Inertia Impact on Microgrid Voltage and Frequency Control |
| 142 | Comparative Analysis Among Controlled Switching Strategies in Transformers Energization |
| 153 | QSTS Simulation of Reverse Power Tap Changer Runaway Condition in Active Distribution Networks |
| 278 | Power Flow in Networks Modeled at Substation Level in Two Stages |

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15 de maio de 2018 – 08h30min às 10h00min

CI – Comercialização de Energia Elétrica

SALA: ICARAÍ

Chairs: Bruno Henriques Dias (UFJF) e Bruno Soares Moreira Cesar Borba (UFF)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 70 | Sustainability of Brazilian Energy Tariff Model Under a High Penetration Scenario of Distributed Photovoltaic Microgeneration |
| 132 | Study Cases of Consumers Migration from Captive Energy Market to Free Energy Market |
| 310 | Analysis of the Solar Energy Contribution in the Price of the Tariff of a Station of Supply for Electric Vehicles using the Model TAROT |
| 46 | Analysis of the growth of the Unregulated Contracting Environment and prospects for the Brazilian electricity market |
| 331 | Short Term Load Forecasting for Power Exchange Between Brazil and Paraguay |
| 291 | Multi-step forecasting of the Brazilian Energy Market Price using Autoregressive Neural Networks |

EE2 – Eficiência Energética e Qualidade de Energia Elétrica

SALA: NITERÓI

Chairs: Marcio Zamboti Fortes (UFF) e Luís Fernando Corrêa Monteiro (UERJ)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 399 | Assessment of the energy efficiency programs of electric power companies according to end users interest and knowledge |
| 100 | Novel Active Filter Selective Control Strategy Using Fourier Linear Combiners |
| 103 | Investigative Study for the Application of Modal Analysis in the Context of Electric Power Quality |
| 126 | The Influence of Transformer Winding Connections and Grounding in the Indices of Voltage Sags |
| 312 | Comparative Overview of Voltage Sags Standards: IEEE 1564 versus Brazilian Regulatory Procedures |
| 272 | Skin Effect Comparative Analysis in Electric Cables Using Computational Simulations |

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15 de maio de 2018 – 08h30min às 10h00min

AT2 – Engenharia de Alta Tensão

SALA: ITAIPU

Chairs: Sergio Gomes Jr. (UFF/CEPEL) e Fabricio Lucas Lirio (CEPEL)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 224 | Analysis of lightning performance of overhead transmission lines: Comparison between insulator string models |
| 260 | Investigating Reflections and Refractions Effects in the UHF Location of Partial Discharges in Power Transformers using Time Domain Simulation |
| 374 | Virtual Reality as a Tool for Electrical Substations Teaching |
| 427 | Methodology to Evaluate the Performance of Metal Oxide Surge Arresters Monitoring Techniques based on the Resistive Leakage Current |
| 459 | Sensitivity Analysis of Dynamic Resistance Measurement Attributes of High Voltage Circuit Breakers |
| 461 | Modeling Lightning as a Voltage Source and as a Current Source - a Comparison Analysis with an ATP Insulation Coordination Study in a 500 kV Air-Insulated Substation |

IC3 – Inteligência Computacional Aplicada a Sistemas Elétricos

SALA: BAIÁ

Chairs: Edgar Manuel Carreño Franco (UNIOESTE) e André Abel Augusto (UFF)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 497 | A Rain-Streamflow Model for Prediction of Limnimetric Behavior of Reservoirs Using Artificial Neural Networks |
| 505 | Detection of Commercial Losses in Electric Power Distribution Systems Using Data Mining Techniques |
| 61 | Non-homogenous firefly algorithm for optimization: application to an economic load dispatch problem |
| 174 | An ANN-Based Algorithm for Fault Detection and Location in MTDC Systems |
| 73 | Load Data Cleaning with Data Mining Techniques |
| 207 | Prediction of Electric Power Systems Influences on Pipeline Systems Using Artificial Neural Networks |

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15 de maio de 2018 – 08h30min às 10h00min

T2 – Transmissão de Energia Elétrica

SALA: FLECHAS

Chairs: Antonio Carlos Siqueira de Lima (UFRJ) e Thiago J. M. Antunes Parreiras (CEPEL)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 140 | Impact of Power Quality on Voltage Stability Assessment in Power Systems using RTDS |
| 237 | Implementation and Performance Evaluation of a Harmonic Filter for Use in Adaptive Single-Phase Reclosing |
| 348 | Performance Analysis of a Synchronization Oscillographic Records Algorithm Considering Errors in Data Acquisition |
| 270 | Parametric Sensitivity Analysis of Longitudinal and Transverse Differential Protections Applied to Double Circuit Transmission Lines |
| 301 | Parametric Analysis of Two-Terminal Fault Location Methods Based on Unsynchronized Data |
| 400 | Analysis of interoperability of relays via teleprotection |

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15 de maio de 2018 – 14h00min às 15h30min

EE3 – Eficiência Energética e Qualidade de Energia Elétrica SALA: NITERÓI

Chairs: Marcio Zamboti Fortes (UFF) e Henrique Fantoni (SM&A Sistemas Elétricos)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 394 | Testing and diagnostics of distribution transformers losses in the presence of harmonics |
| 150 | Comparative Analysis of Power Definitions in Nonsinusoidal Conditions – A Case Study |
| 406 | Studying of the energy quality of a distribution network of Marechal Deodoro-AL with the integration of solar photovoltaic generation |
| 161 | Optimization of Street Lighting design following the brazilian standard using PSO |
| 165 | Harmonic Mitigation Techniques Applied to Industrial Power Systems: Real Case Study With Measurements |
| 205 | Energy Efficiency Electric Motor Systems: Motor Replacement Analysis – A Case Study |

G2 – Geração de Energia SALA: ITAIPU

Chairs: Luis Henrique Lopes Lima (UFJF) e Edgar Manuel Carreño Franco (UNIOESTE)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 329 | Solar Generation Impact on Voltage of Rural Power Distribution Networks: A Case Study |
| 390 | A Comparative Analysis of Different Control Strategies Applied To DFIG-Based Power Systems |
| 395 | Analysis of the Electric Generation of a Pendular Generator |
| 407 | Photovoltaic Power Forecasting Using a Hybrid Method |
| 415 | Identification of Direct Axis Parameters of the Synchronous Machine Using Optimization Algorithm and Voltage Recovery Test |
| 417 | Wind Turbine Power Curve Modeling Based on Hybrid Fuzzy Clustering Algorithms |

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15 de maio de 2018 – 14h00min às 15h30min

RI2 – Redes Elétricas Inteligentes

SALA: FLECHAS

Chairs: Paulo Fernando Ribeiro (UNIFEI) e Alexandre Rasi Aoki (UFPR)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 498 | Smart Grid Communication: Requirements and SCADA Protocols Analysis |
| 268 | Analysis of Sympathetic Tripping Problem in Photovoltaic Distributed Generation with IEC 61850 |
| 357 | Volt/var Control Integration in Smart Distribution Grids |
| 345 | Low Cost Monitoring System for Distribution Transformers |
| 397 | Demand-side Management of Hierarchical Energy Distribution Based on a Joint Intention Protocol |
| 387 | Self Healing Feature Incorporated to RTDS for Solving Reconfiguration Network Problem |

P2 – Planejamento e Regulação

SALA: BAIA

Chairs: Alexandre Pinto Alves da Silva (ITV) e Bruno Henriques Dias (UFJF)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 171 | Impact of reservoir operating rules on the performance of multi-purpose cascade hydroelectric systems: The case of Tietê-Paraná Waterway |
| 203 | Two-Stage Transmission Expansion Planning Considering Reliability and Renewable Sources |
| 286 | Stochastic TAROT Model - Stochastic Economic Market Model for Risk Evaluation of a Regulated Electricity Distribution Company |
| 321 | Study Case of the Stochastic TAROT® Model - Comparison of the economic performance of Brazilian Electric Power Distribution Companies considering the inherent risks of the sector |
| 342 | Methodology for determining the energy deficit penalty function for hydrothermal dispatch |
| 440 | Teleprotection over SONET based on IEC 61850 |

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15 de maio de 2018 – 14h00min às 15h30min

D3 – Distribuição de Energia Elétrica

SALA: INGÁ

Chairs: Leonardo Willer de Oliveira (UFJF) e Marcio Ribeiro Guimaraens (UFF)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 210 | Mobile Battery Energy Storage Systems Influence on Overcurrent Protection of Distribution Networks |
| 385 | Evaluation of Electricity Theft Blocking System on Low Voltage Distribution Networks Part I – Power Quality Tests |
| 392 | Evaluation of Electricity Theft Blocking System on Low Voltage Distribution Networks Part II – Withstanding Tests |
| 375 | Financial Impact of Solar Distributed Generation's Growth on Distribution Companies Revenue |
| 471 | Performance Analysis of Forward/Backward Sweep Power Flow Methods for Radial Distribution Systems |
| 247 | Energy Function Applied to Voltage Stability Analysis in Active Distribution Systems |

EP2 – Eletrônica de Potência

SALA: ICARAÍ

Chairs: Lucas Frizzera Encarnação (UFES) e Felipe Sass (UFF)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 311 | High-Frequency Isolated Bridge Inverter with ZVS Switching and Phase Shift Modulation |
| 388 | Design and Comissioning of a Regenerative System for Load Testing |
| 389 | An Experimental Test Bench for Evaluation of Techniques to Enhance the Wind Generators Integration to the Grid |
| 432 | Switching Loss Reduction Method for Dual Inverter DTC of an Induction Machine |
| 481 | High Power Factor Converter for LED Drivers Based on Isolated Ćuk Topology |
| 338 | Simulation and Dynamic Analysis of Three-Phase Photovoltaic System Connected on Grid Employing Matlab / Simulink Software |

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15 de maio de 2018 – 14h00min às 15h30min

M4 – Modelagem e Simulação de Sistemas Elétricos

SALA: H REAL + NOBRE

Chairs: Antônio José Alves Simões Costa (UFSC) e Julio Cesar Stacchini de Souza (UFF)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 261 | Identification of Non-Technical Losses in Distribution Systems via State Estimation and Geometric Tests |
| 238 | Sequential Method of State Estimation for Distribution Systems |
| 495 | Finding Strategic Locations for Phasor Measurement Units by Heuristic Methods |
| 32 | Transient Stability of the Grid Integrated with Wind Turbines during Fault Condition |
| 15 | Evaluation of the Effects of Representation of Synthetic Inertia on Double-Induced Induction Type Wind Turbines in Frequency Control |
| 105 | Power Systems Contingency Analysis Using Bus Impedance Matrix |

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16 de maio de 2018 – 08h30min às 10h00min

D4 – Distribuição de Energia Elétrica

SALA: H REAL + NOBRE

Chairs: Leonardo Willer de Oliveira (UFJF) e Marcio Andre Ribeiro Guimaraens (UFF)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 235 | The Proposition of a Multiagent System for Adaptive Protection of a Distribution System |
| 255 | Review of Technical Impacts and Concerns Caused by Distributed Generation in Distribution Systems Protection |
| 251 | A Study of Grounding in a Multiphase Unbalanced Distribution Network with Neutral Conductor: an Analysis on the IEEE NEV Test Feeder |
| 280 | Field test results of a self-monitored supervisor current transformer to reduce non-technical losses |
| 409 | Voltage Regulators Operational Stress Analysis and Reduction in Distribution Systems with Distributed Generation |
| 154 | Optimal Operation of Storage Systems in Distribution Networks Considering Battery Degradation |
| 403 | Analysis of Power Factor and Reactive Power Measured in Industrial Environment With Distributed Generation |

G3 – Geração de Energia

SALA: ITAIPU

Chairs: Edgar Manuel Carreño Franco (UNIOESTE) e Bruno S. Moreira Cesar Borba (UFF)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 449 | Photovoltaic Micro-Grid for GD with Active and Reactive Power Injection Control for Connected and Islanded Operation |
| 5 | Control Of Active And Reactive Powers Of A Wind Turbine Equipped With DFIG to Reduce the Voltage Violations In Rural Areas |
| 429 | Micro Wind Generation Modeling with PMSG |
| 9 | The use of natural gas blends with syngas from biomass in gas micro turbine Thermal performance and emissions tests |
| 197 | Multi Step Forecasting of the Wind Generation by ARIMA and k-NN |
| 372 | Synthetic generation of offshore wind speed time series using MCMC method |

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DE SISTEMAS ELÉTRICOS
12 a 16 de maio de 2018
NITERÓI-RIO DE JANEIRO



PROGRAMAÇÃO DAS APRESENTAÇÕES ORAIS

16 de maio de 2018 – 08h30min às 10h00min

EE4 – Eficiência Energética e Qualidade de Energia Elétrica **SALA: ICARAÍ**

Chairs: Marcio Zamboti Fortes (UFF) e Henrique Fantoni (SM&A Sistemas Elétricos)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 214 | Performance analysis of active energy meters in non-sinusoidal conditions |
| 420 | Development of a Modular Power Quality Meter for Medium Voltage Regulators |
| 245 | Analysis of Harmonic Distortion Influence in a Distributed Synchronous Generator |
| 250 | Analysis of the Contribution of a Battery Bank to Voltage Regulation in a Distribution System |
| 490 | Power Quality – Regulation of Residential Electrical Loads |
| 148 | Analyzing of energy efficiency in a school buildings: Case study |

EP3 – Eletrônica de Potência **SALA: BAIA**

Chairs: Jose Andres Santisteban Larrea (UFF) e Daniel Henrique Nogueira Dias (UFF)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 160 | Development of an Electric Vehicle Charging Station |
| 189 | Zero-Sequence Network Voltage Compensation by a Three-Phase Four-Wire Grid-Connected Converter |
| 190 | Analysis and Design of Proportional-Resonant Controllers Based on Pole Placement Approach |
| 191 | State Feedback Control of a Back-To-Back Converter for Microgrids Applications |
| 378 | Switched Reluctance Machine in a Flywheel Energy Storage System for Grid Applications |
| 506 | Charge/Discharge Experiments in a Flywheel with Switched Reluctance Machine |

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16 de maio de 2018 – 08h30min às 10h00min

T3 – Transmissão de Energia Elétrica

SALA: FLECHAS

Chairs: Antonio Carlos Siqueira de Lima (UFRJ) e Thiago T. Borges (UFF/PETROBRAS)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 115 | Time-Domain Protection Elements: Study and Implementation |
| 257 | Traveling Wave-Based Differential Protection Applied to Hybrid Transmission Lines: Performance and Setting Studies |
| 350 | Influence of Grounding Representation on the Lightning Performance of Line Surge Arresters-Part I: Impact on the Developed Overvoltages |
| 354 | Influence of Grounding Representation on the Lightning Performance of Line Surge Arresters-Part II: Impact on the Energy Dissipation |
| 396 | Graphical Interface to Aid in Development of Travelling-Wave-Based Line Protection and Fault Location Techniques |
| 325 | Analysis of the Cable Length Impact on the Performance of Differential and Directional Protections in Multi-terminal VSC-HVDC Systems |

M5 – Modelagem e Simulação de Sistemas Elétricos

SALA: NITERÓI

Chairs: Glauco Nery Taranto (COPPE/UFRJ) e Sergio Gomes Jr. (UFF/CEPEL)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 202 | Representation of Multiport Rational Models in the ATP – Lumped Network Results |
| 204 | Simulation of Inrush Currents in a Wind Power Plant using ATP Draw |
| 77 | A Frequency Control Approach Based on Wind Generation Operating as Virtual Synchronous Generator |
| 252 | Parameter estimation of a two-layer soil model using Quasi-Newton methods |
| 253 | Cross-Differential Protection for Double-Circuit Lines Using Current Traveling Waves |
| 398 | Linear Analysis of Systems Containing Transport Delays |

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M6 – Modelagem e Simulação de Sistemas Elétricos

SALA: INGÁ

Chairs: João Alberto Passos Filho (UFJF) e André Abel Augusto (UFF)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 254 | Synchronous Generator Protection in the Context of Microgrids |
| 265 | Sizing of Battery Energy Storage System in Distribution Systems for Voltage Profile Improvement |
| 44 | Voltage Stability Assessment: Voltage Control Inadequacy Problem |
| 184 | Probabilistic Power Flow with Correlations Among Wind Speeds |
| 295 | Modeling and Digital Simulation of a Back-to-Back Converter to Integrate a Variable Speed Generator using the OpenModelica Platform |
| 304 | Applications of Hopf Bifurcation Analysis for Power System Security Assessment |

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16 de maio de 2018 – 14h00min às 15h30min

D5 – Distribuição de Energia Elétrica

SALA: INGÁ

Chairs: Leonardo Willer de Oliveira (UFJF) e Marcio Andre Ribeiro Guimaraens (UFF)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 208 | Power Quantities Calculation by using an FPGA Device, applying IEEE I459-2010 Standard |
| 248 | A Probabilistic Analysis of the Impact of Electrical Vehicles in a Shopping Center Phase Unbalance |
| 333 | Optimal Operation and Economical Analysis of a Trigenation System |
| 355 | Power Summation Method for Distribution Networks with Voltage Regulators |
| 121 | Load Balancing in a Low-Voltage Distribution Network by Genetic Algorithm |
| 369 | Analysis for the Dielectric Design Optimization to Distribution Transformers by Simulation in Finite Elements |

T4 – Transmissão de Energia Elétrica

SALA: FLECHAS

Chairs: Thales T. Lopes (UFF/ELETOBRAS) e Thiago T. Borges (UFF/PETROBRAS)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 455 | Harmonics in the Electrical System – Instrument and voltage divider performance |
| 58 | A Comparison of Impulse Withstand Parameters of Three-Phase and Single-Phase Compact Line Structures Considering Bare Cables |
| 467 | Evaluation of Phasor Estimation Methods for Transmission Lines with series Compensation |
| 480 | A Performance Evaluation Approach of Commercial Numerical Distance Relays on Little Longer than Half-Wavelength Transmission Lines |
| 88 | A robust method for estimating transmission line parameters from PMU measurements |
| 414 | Calculation and Three-Dimensional Analysis of Electric and Magnetic Fields on Transmission Lines with MATLAB® |

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RI3 – Redes Elétricas Inteligentes

SALA: ITAIPU

Chairs: Alexandre Rasi Aoki (UFPR) e Robson Francisco da Silva Dias (UFRJ)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 271 | Assessing the Performance of Smart Inverter Volt-Watt and Volt-Var Functions in Distribution Systems with High PV Penetration |
| 442 | Design of a real-time, low-cost monitoring system for hybrid solar-wind power generation system |
| 226 | Voltage Control Simulations in Distribution Systems with High Penetration of PVs Using the OpenDSS |
| 82 | Use of Smart Grids to Monitor Technical Losses to Improve Non-technical Losses Estimation |
| 212 | Architecture and design of a pilot microgrid connected to the main network |
| 10 | Smooth Synchronization Method for the Reconnection of Islanded Microgrids |

EE5 – Eficiência Energética e Qualidade de Energia Elétrica

SALA: NITERÓI

Chairs: Pedro Gomes Barbosa (UFJF) e Marcio Zamboti Fortes (UFF)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 343 | Proposal and Implementation of a Low Cost Single Phase Power Meter |
| 149 | Frequency Response Analysis Applied in Potential Transformers and theirs Implications in the Electrical Power System |
| 96 | Voltage Unbalance Analysis in a Distribution System Using Openss Software |
| 158 | Development of an Intelligent Energy Demand Response Program for a Brazilian Free Consumer of Energy |
| 412 | Detection and Classification of Power Quality Disturbances with Wavelet Transform, Decision Tree Algorithm and Support Vector Machines |
| 451 | Harmonic and interharmonic current spectrum analysis of a 22 MVA cycloconverter |

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P3 – Planejamento e Regulação

SALA: BAIA

Chairs: Alexandre Pinto Alves da Silva (ITV) e Vitor Hugo Ferreira (UFF)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 72 | Energy Storage and Photovoltaic Distributed Generation – Evaluation of Impacts on the Remuneration of Prosumers |
| 330 | Methodology for Evaluating the Maximum Penetration of Wind Energy in Interconnected Systems Considering the Active Power Interchange |
| 501 | Hybrid Systems Control Applied to Wind Power Forecasting Deviation Considering PHS |
| 274 | Representation of multiple demand scenarios in the mid-term hydrothermal system operation scheduling |
| 419 | Determination of Regulatory Frameworks to Enable Investments in Energy Storage Systems in Power Systems |
| 284 | Analysis of demand response program impact on prosumers |

M7 – Modelagem e Simulação de Sistemas Elétricos

SALA: H REAL + NOBRE

Chairs: João Alberto Passos Filho (UFJF) e Sergio Luis Varricchio (CEPEL)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 317 | Parameter Estimation of Load Model Using Disturbance Measurements Provoked by Taps of Transformers |
| 341 | Transient Short-Circuit Calculations Using Time Shifts and Rational Models – Preliminary Results |
| 358 | Simulation and Analysis of a Distribution System With PV Penetration Using RTDS |
| 24 | Analysis of a simplified digital filter for the automatic identification of transients contained in oscillographies |
| 373 | Modeling and Simulation of a Hybrid Single-Phase/Three-Phase System in Modelica |
| 446 | Variable Step-Size Algorithm for Transient Stability Programs |

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C2 – Comercialização de Energia Elétrica

SALA: ICARAÍ

Chairs: Bruno Soares Moreira Cesar Borba (UFF) e Bruno Wanderley França (UFF)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 169 | Study of the Heliothermal Generation in the city of Petrolina through "System Advisor Model - SAM" Software |
| 112 | Sensitivity Analysis of the Transmission Cost Allocation by Nodal Method |
| 364 | Technical and Economic Feasibility Analysis for Solar Photovoltaic Generation Plants |
| 371 | Risk Management and Portfolio Optimization of Electric Power Trading |
| 236 | Firm Energy of Wind Farms and its Influence on Hydraulic Generation System |
| 219 | Electric Mobility – The challenges of regulating the charging infrastructure during early market development in Brazil |

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D6 – Distribuição de Energia Elétrica

SALA: ITAIPU

Chairs: Renan Silva Maciel (UTFPR) e Márcio André Ribeiro Guimaraens (UFF)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 147 | Hosting Capacity Evaluation of Distributed Generation Systems with Genetic Algorithm |
| 181 | Particularities of Inverter-Based Generators Short-Circuit Currents and their Impacts on Electric Power Distribution Network Protection |
| 352 | Simulated Annealing and Tabu Search applied on Network Reconfiguration in Distribution Systems |
| 423 | Fast Decoupled Power Flow for Active Distribution Networks |

IC4 – Inteligência Computacional Aplicada a Sistemas Elétricos

SALA: INGÁ

Chairs: Vitor Hugo Ferreira (UFF) e Edgar Manuel Carreño Franco (UNIOESTE)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 194 | A Hybrid EPSO for Power System Stabilizers Design |
| 243 | A Hybrid Method for Islanding Stability Detection of Distributed Generators using Wavelet Transform and Artificial Neural Networks |
| 299 | A New Methodology for High Impedance Fault Detection, Classification and Location Using PMUs |
| 500 | Artificial Neural Network for Probabilistic Forecasting of the Output Power of Photovoltaic Systems |

EE6 – Eficiência Energética e Qualidade de Energia Elétrica

SALA: NITERÓI

Chairs: José Andres Santisteban Larrea (UFF) e Bruno Wanderley França (UFF)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 424 | A Prototype Development for Energy Efficiency of Traditional Air Conditioners using Mobile Application with Intelligent Control of Hysteresis |
| 491 | Impact of photovoltaic generation system on the energy quality of distribution systems |
| 16 | Analysis and Mitigation of Harmonic Distortion in Distribution Networks by an Active Filter |
| 282 | Study of Voltage Profile in Distribution Network using the Reactive Power Control in Distributed Generation |

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16 de maio de 2018 – 16h00min às 17h00min

NT2 – Novas Tecnologias e Materiais

SALA: ICARAÍ

Chairs: Guilherme Gonçalves Sotelo (UFF) e Rubens de Andrade Jr. (UFRJ)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 215 | Comparison of Supercapacitor Storage System Control Methods for Wind Power Smoothing |
| 244 | Synchronous-Hysteresis Superconducting Machine with Stacks of Second Generation Tapes |
| 334 | Compensator for Random Behavior Loads Based on Flywheel |
| 384 | Simulation of Resistive Superconducting Fault Current Limiter in ATPDraw |

M8 – Modelagem e Simulação de Sistemas Elétricos

SALA: H REAL + NOBRE

Chairs: Antônio Carlos Zambroni de Souza (UNIFEI) e Andre Abel Augusto (UFF)

| Número do Artigo | Título do Artigo |
|------------------|--|
| 125 | Comparative Study of ZnO Surge Arrester Models by Means of Lightning Overvoltage Simulation |
| 222 | Revisiting Edison: Residential DC Nanogrids |
| 463 | Load Flow Problem Formulation as a Holomorphic Embedding Method |
| 464 | Development of a Finite Element Model for Steady State Electromagnetic-Thermal Stator Bar Analysis |

D7 – Distribuição de Energia Elétrica

SALA: BAIA

Chairs: Henrique de Oliveira Henriques (UFF) e Leonardo Willer de Oliveira (UFJF)

| Número do Artigo | Título do Artigo |
|------------------|---|
| 231 | Evaluation of a Distribution Transformer Impacts considering Electric Vehicles and Distributed Generation |
| 502 | Impact of Photovoltaic Systems on Voltage Magnitude and Unbalance in Low Voltage Networks |
| 504 | Application of Conservation Voltage Reduction in a Brazilian Distribution Networks for Flexible Load Management |
| 487 | Impacts on Distributed Generation with Harmonics Analysis – Case Study |
| 139 | Spatial Analysis of Residential Load Growth due to Electric Vehicle Recharge |