IEEE Transactions on Energy Conversion

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➢ The Theme: Energy conversion lies at the heart of electric power systems. Advances in several fronts including materials, conversion methods, power electronics, and controls have created new opportunities for energy conversion from conventional and new sources of energy and their connection to electrical power systems with improved efficiency. Modeling, design, and analysis of these new energy conversion systems require development of new simulation models and schemes. This Special Issue stems from the collective effort of the IEEE PES Working Group on Modeling and Analysis of System Transients using Digital Programs and its several task forces. The aim is to provide a timely opportunity for researchers, practicing engineers, and other stakeholders to share their latest discoveries in the area of advanced energy conversion systems and their incorporation into electrical power systems. A strong focus of the Special Issue is on advances in the computer modeling and simulation of these devices and systems; as such submissions made need to demonstrate strong original contributions to these areas. The particular topics of interest include, but are not limited to, the following:

➢ Modeling and simulation of energy storage systems (batteries, flywheels, etc.), and their power-electronic interfaces to the grid
➢ Modeling and design of new and special rotating energy conversion systems, e.g., new electric machine designs for wind energy applications
➢ Modeling of converter topologies and controls for enabling efficient energy conversion and optimal control methods
➢ Field test and measurements of advanced energy conversion systems for model validation
➢ Interactive modeling of conversion systems with sources and loads
➢ Techniques for accelerating multi-scale dynamic simulations of complicated energy conversion systems including model aggregation and surrogate models
➢ Multiple-physical modeling and simulation of energy conversion components in a multiple-energy network
➢ Average value modeling and dynamic phasor modeling of emerging power conversion devices and systems for improved simulation efficiency and accuracy
➢ EMT level modeling and simulation of inverter-based generation
➢ Development of real-time simulation model and computing hardware for hardware-in-the-loop testing of advanced energy conversion systems

Manuscript Preparation and Submission

Prior to preparing a full paper, an extended abstract of 500-1000 words should be emailed in PDF form to the Guest Editor-in-Chief, Xiaoyu Wang (xiaoyuw@carleton.ca). The abstract should concisely describe the main idea of the paper, and make a clear case regarding the novelty and technical contribution of the work. The submitted abstract must include the list of all co-authors, and identify the corresponding author and his/her affiliation for the purpose of future communications. The team of Guest Editors will evaluate the submitted abstracts for appropriateness and timeliness. Based on scope and suitability for this special issue, authors will be invited to submit full papers, which will then undergo a peer review process. The full manuscripts will be submitted in electronic format through the Manuscript Central web site: http://mc.manuscriptcentral.com/tec-pes. On the submitting page #1, in the drop-down list for Manuscript Type, select: Modeling and Simulation Methods for Analysis and Design of Advanced Energy Conversion Systems.

Timetable

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deadline for submission of abstracts</td>
<td>15 December 2018</td>
</tr>
<tr>
<td>Announcement of selected abstracts</td>
<td>10 January 2019</td>
</tr>
<tr>
<td>Deadline for submission of full manuscripts</td>
<td>15 April 2019</td>
</tr>
<tr>
<td>Completion of first round of review</td>
<td>15 June 2019</td>
</tr>
<tr>
<td>Deadline for submission of revised papers</td>
<td>15 August 2019</td>
</tr>
<tr>
<td>Manuscript final decision</td>
<td>1 October 2019</td>
</tr>
<tr>
<td>Estimated publication date</td>
<td>15 October (on-line) December 2019 (print)</td>
</tr>
</tbody>
</table>
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