Call for Contributions

1. Inform the Chair: with the Title of your Contribution
2. Submission URL:
https://www.iariasubmit.org/conferences/submit/newcontribution.php?event=ENERGY+2021+Special
Please select Track Preference as **MoDyPoG**
3. Note: *For 2021, all events will be held in a hybrid mode: on site or virtual choices (live, prerecorded videos, voiced presentation slides, and .pdf slides). We hope for better times allowing us to return to the traditional on site scientific events. However, we are ready to adapt any which way the conditions dictate.*

Special track

MoDyPoG: Modelling Dynamics of Power Grids

Chair and Coordinator
Prof. Dr. Dr. h.c. Eckehard Schöll, PhD, Institut für Theoretische Physik, Technische Universität Berlin, Germany, and Potsdam Institute for Climate Impact Research (PIK), Germany
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along with
ENERGY 2021, The Eleventh International Conference on Smart Grids, Green Communications and IT Energy-aware Technologies
https://www.iaria.org/conferences2021/ENERGY21.html
May 30/June 3, 2021 Valencia, Spain

To reach the goal of limiting the climate change below two degrees, integrating renewable and sustainable energy sources into the electrical power grid is essential. Wind and solar power are the most promising contributors to reach a sustainable energy supply but their integration into the existing electric power system remains an enormous challenge. To ensure stable operation of the grid, a complex systems approach is needed, gathering a multidisciplinary scientific community. The first steps towards applying the methods of statistical physics and nonlinear dynamics of complex networks to characterize the collective evolution emergent in power grids have been taken, and active research is ongoing.

The central observable in power grid monitoring, operation, and control is the grid frequency: primary control on short time scales to stabilize the grid frequency and secondary control on longer time scales to restore the nominal grid frequency are both fundamental. The increase of renewable energy challenges this central control paradigm, as generation becomes more volatile and the spinning reserve decreases. In addition, fluctuating demand and fixed trading intervals already contribute to frequency deviations.

In this Special Track we focus on recent developments in modeling from a complex systems and networks perspective. Promising directions of research are, e.g., how the collective grid dynamics is driven by fluctuations originating from varying power demands, fluctuating power input, and trading; how the dynamics changes according to decentralization and modification of the network topology; how power quality and grid stability can be improved by novel control concepts.

Topics include, but not limited to:

Nonlinear Dynamics;
Stability;
Feed-in Fluctuations;
Control;
Network optimization;
Synchronization of complex networks;
Modelling approaches.

Contribution Types
- Regular papers [in the proceedings, digital library]
- Short papers (work in progress) [in the proceedings, digital library]
- Posters: two pages [in the proceedings, digital library]
- Posters: slide only [slide-deck posted on www.iaria.org]
- Presentations: slide only [slide-deck posted on www.iaria.org]
- Demos: two pages [posted on www.iaria.org]

Important Datelines
Inform the Chair or Coordinator: As soon as you decide to contribute
Submission: April 16, 2021
Notification: May 3, 2021
Registration: May 13, 2021
Camera ready: May 13, 2021
Note: *The submission deadline is somewhat flexible, providing arrangements are made ahead of time with the chair.*

Paper Format
- See: http://www.iaria.org/format.html
- Before submission, please check and comply with the editorial rules:
http://www.iaria.org/editorialrules.html

Publications
- Extended versions of selected papers will be published in IARIA Journals: http://www.iariajournals.org
- Print proceedings will be available via Curran Associates, Inc.: http://www.proceedings.com/9769.html
- Articles will be archived in the free access ThinkMind Digital Library: http://www.thinkmind.org

Paper Submission
https://www.iariasubmit.org/conferences/submit/newcontribution.php?event=ENERGY+2021+Special
Please select Track Preference as **MoDyPoG**

Registration
- Each accepted paper needs at least one full registration, before the camera-ready manuscript can be included in the proceedings.
- Registration fees are available at http://www.iaria.org/registration.html

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