ewi Institute of Energy Economics
at the University of Cologne
Exploring energy markets –
enhancing decisions.

University
of Cologne

Cologne International Energy Summer School (CIESS) in Energy/Environmental Economics and Informatics
July 22 – July 26, 2019, Cologne, Germany

Conference Venue: Institute of Energy Economics (EWI) at the University of Cologne
Vogelsanger Str. 321a, 50827 Cologne - Germany

Program Overview (as of July 15, 2019)
Monday, July 22

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13:00 – 13:30	Registration / Coffee and cake
13:30 – 14:00	**Welcome and introduction**
	Prof. Dr. Marc Oliver Bettzüge and Prof. Dr. Wolfgang Ketter (Directors of the Institute of Energy Economics at the University of Cologne, EWI)
14:00 – 15:30	**Blockchain, Storage and Demand-Side Management**
	Prof. Srinivasan Keshav (University of Waterloo, Canada)
	Lec 1: Overall context and vision

- **Technological disruptions in energy systems (solar, storage, EVs, sensing)**
- **Potential economic impact**
- **Digitalization**
- **The role of trust and blockchains**

15:30 – 16:00	Coffee Break
16:00 – 17:30	**Blockchain, Storage and Demand-Side Management**
	Prof. Srinivasan Keshav (University of Waterloo, Canada)
	Lec 2: Smart grids

- **AMI**
- **Demand response**
- **Distributed generation**
- **Microgrids**
- **Behind-the-meter PV, EV, and Storage control**
- **Virtual power plants/aggregators**

17:30 – 19:30	Welcome drinks and snacks

Tuesday, July 23

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09:00 – 10:30	**Blockchain, Storage and Demand-Side Management**
	Prof. Srinivasan Keshav (University of Waterloo, Canada)
	Lec 3: The role of storage
	• **Introduction to energy storage**
	• **Storage roles in smart grid**
	• **EVs**
10:30 – 11:00	<mark>Coffee break</mark>
11:00 – 12:30	**Policy Guidance and Business Model Innovation in a Digitalized Sustainable Energy Landscape using Power TAC**
	Prof. Dr. Wolfgang Ketter (Institute of Energy Economics at the University of Cologne, EWI)
12:30 – 13:30	<mark>Lunch (outside EWI)</mark>
Afternoon program	
13.30 – 17:00	**PhD Presentations**
	(10 minutes lecture, 10 minutes discussion)

Wednesday, July 24

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09:00 – 10:30	**Blockchain, Storage and Demand-Side Management**
	Prof. Srinivasan Keshav (University of Waterloo, Canada)
	Lec 4: Introduction to Blockchain
	• **Brief history and context**
	• **Blockchain attributes**
10:30 – 11:00	<mark>Coffee break</mark>
11:00 – 12:30	**Blockchain, Storage and Demand-Side Management**
	Prof. Srinivasan Keshav (University of Waterloo, Canada)
	Lec 5: Blockchains, continued
	• **Consensus**
	• **Permissioned and permissionless blockchains**
	• **Limitations**
12:30 – 13:30	<mark>Lunch (outside EWI)</mark>
Afternoon program	
13.30 – 17:00	**Visit of the Rheinische Braunkohlerevier (Rhenish lignite mining area) with snacks and drinks afterwards**
	Management Alexander Nolden (Political Affairs & Corporate Responsibility, RWE AG)
13.30 – 14:15	**Shuttle-Service to Garzweiler (Rheinische Braunkohlerevier)**
14:15 – 16:45	**2.5 h guided tour**
16:45 – 18:15	**Get together / snack**
18:15 – 19:00	**Return journey (Garzweiler - > Cologne)**

Thursday, July 25

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09:00 – 10:30	**Blockchain, Storage and Demand-Side Management**
	Prof. Srinivasan Keshav (University of Waterloo, Canada)
	Lec 6: Blockchain and energy
	• **Role of blockchains in energy systems**
	• **RE certificates, one- and two-sided markets, auditing**
	• **Open research questions**
10:30 – 11:00	<mark>Coffee break</mark>
11:00 – 12:30	**Global Energy Transformation: A Roadmap to 2050**
	Gayathri Prakash (Associate Professional, REmap – Renewable Energy Roadmaps, IRENA International Renewable Energy Agency)
12:30 – 13.30	<mark>Lunch (outside EWI)</mark>
13.30 – 15.00	**Bayesian and Reinforcement Learning and their Applications to Smart Cities I**
	Prof. Haldun Aytug (Karl F. and Nancy J. Flammer Professor of Information Systems and Operations Management at the Warrington College of Business)
15:00 – 15:30	<mark>Coffee break</mark>
15.30 – 17.00	**Bayesian and Reinforcement Learning and their Applications to Smart Cities II**
	Prof. Haldun Aytug (Karl F. and Nancy J. Flammer Professor of Information Systems and Operations Management at the Warrington College of Business)

Evening program - Kick off – PASS Workshop: Dinner together with the summer school and PASS participants

18:30 – 19:00	Welcome and drinks at at the brewhouse „Gaffel am Dom / Domstube" with a view of the cathedral
19:00	Opening Buffet - special hot and cold regional (vegetarian) food

Individual arrival:
Address: Gaffel am Dom
Entrances: "Trankgasse" or "Bahnhofsvorplatz 1"
50667 Cologne (historical part of Cologne – near to the cathedral.)
Tel. +49 (0)221 - 9 13 92 60
www.gaffelamdom.de

Friday, July 26

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PASS Workshop

09:00 – 09:30	Registration
09:30 – 11:00	**Session A: (4 papers) 15min + 7.5min Q&A**

The impact of aggregation on pass-through cost of emissions	Gloria Colmenares, Dominik Schober, and Andreas Löschel	University of Münster
VidyutVanika: An Autonomous Broker Agent for Smart Grid Environment	Susobhan Ghosh, Kritika Prakash, Sanjay Chandlekar, Easwar Subramanian, Sanjay P. Bhat, Sujit Gujar, and Praveen Paruchuri	IIIT Hyderabad, TCS Innovation Lab
CrocodileAgent 2018: Smart Time-of-Use Tariffs to Reduce Peak-Demand Charges	Demijan Grgić, Hrvoje Vdović, Jurica Babic, and Vedran Podobnik	University of Zagreb
COLDPower 2019: A measured but profitable energy broker	Ansel Y. Rodríguez González	CONACYT - CICESE UT3

11:00 – 11:30	==Coffee break==
11:30 – 13:00	**Session B: (4 papers)**

Environmental Price of Anarchy: Innovative Mechanisms for Sustainable Traffic Management	Yixuan Liu and Andrew B. Whinston	University of Texas
THE ROLE OF INFORMATION AS TRANSPORTATION POLICY INTERVENTION IN THE SHARING ECONOMY CONTEXT	Joshua Paundra , Jan van Dalen , Laurens Rook , Clint Pennings, and Wolfgang Ketter	Erasmus University, Delft University of Technology, University of Cologne
Utilizing Real-Time Competitor Information to Boost Profits for One-Way Transportation	Karsten Schroer, Micha Kahlen, Thomas Lee, Wolfgang Ketter, and Alok Gupta	University of Cologne, UC Berkeley, U of Minnesota
Quantifying the Impact of Places of Interest onto Charging Station Infrastructure	Dario Pevec, Jurica Babic, Arthur Carvalho, Yashar Ghiassi-Farrokhfal, Wolfgang Ketter, and Vedran Podobnik	University of Zagreb, Miami University, Erasmus University, University of Cologne

13:00 – 14:00	==Lunch (outside EWI)==

14:00 – 15:30 **Session C: (4 papers)**

BATTERY WITH MARKET POWER IN ELECTRICITY MARKETS	Nastaran Naseri, Yashar Ghiassi-Farrokhfal, Wolfgang Ketter, and John Collins	University of Cologne, Erasmus University, University of Minnesota
How Can Behavioral Demand Response Be Enggaing	Silpa Sangeeth L.R., Saji K. Mathew, and Richard T. Watson	Indian Institute of Technology Madras, The University of Georgia
Optimal Critical Peak Pricing (CPP) Program Design in Constrained Electricity Systems Using Time-Dependent Demand Response Functions and Reinforcement Learning	Marie-Louise Arlt, Gunther Gust, and Dirk Neumann	University of Freiburg
AGENT-BASED MODELLING AND SIMULATION OF CIRCULAR ECONOMY SCENARIOS	Roman Zeiss	University of Cologne

15:30 – 16:00 <mark>Coffee break</mark>

16:00 – 17:00 **Session D: (5 papers) 9min + 3.5min Q&A**

Cross-subsidization in electricity tariff designs: the effects of renewables and metering	Mohammad Ansarin, Yashar Ghiassi-Farrokhfal, Wolfgang Ketter, and John Collins	Erasmus University, University of Cologne, and U of Minnesota
A restification methodology for the PowerTAC framework	Grigorios Christainas, Lampros Makrodimitris, and Andreas Symeonidis	University of Thessaloniki
Natural Gas Demand Analysis: The Case of Egypt	Markos Farag	University of Cairo
Applying smart home in the field – results, unexpected findings and spillover effects	Sascha Birk , Lukas Hilger , Tobias Rehm, and Thorsten Schneiders	University of Applied Sciences, Cologne
DEVELOPING A MODEL FOR CONSUMER MANAGEMANT OF DECENTRALIZED OPTIONS	Cordelia Frings and Broghan Helgeson	Institute of Energy Economics, U of Cologne

17:00 – 17:1516 **Power TAC award ceremony**
End of CIESS and PASS workshop
17:15 – 18:30 <mark>Drinks and snacks</mark>