



SUMMARY

The main objective of the workshop is to present a state of the art and prospects shared between Transmission System Operators, Universities and Suppliers of applications on robust methods for power system state estimation and load forecasting.

State estimation and load forecasting are two old topics in power systems, these functions are essential for an efficient management of power systems. The first one helps to define the current state of the system and the second one to forecast its possible evolution. When the system is operated near to its limits, it becomes more and more important to define accurately its current state and its possible evolution. To enhance the accuracy of these two functions, classical methods should be revisited in order to become more robust to deviations on hypothesis on the underlying model of the system. Nowadays, standard powerful computers give opportunities to increase the method's complexity to achieve this objective. From an operational point of view, we know that pre and post processing must be added to classical methods in order to deal with actual systems. The challenge is to design methods that could tackle the complexity of actual power system. The main points to address are : how to deal with outliers, missing data, errors in fixed parameters, particular behaviours of the system ? For state estimation and load forecast, the problem is to estimate states or parameters, fitting a certain model. Some analysis of statistical properties of estimators and of numerical methods might be similar for the two functions. We think this workshop could help to find some possible connections between the two subjects.

**ROBUST METHODS FOR POWER
SYSTEM STATE ESTIMATION AND
LOAD FORECASTING**

STATE OF THE ART AND PROSPECTS

WITH THE PARTICIPATION OF

Mr André MERLIN

Chairman of the RTE Management Board

Mr Pierre BORNARD

Deputy Managing Director of RTE

Mr Mark O'MALLEY

IEEE PES, Western European zone Chairman

Mrs Marie-Pierre BONGRAIN

Head of Methods and Support Department of RTE
French IEEE PES Chapter chair

Mr Lamine MILI

Professor at Virginia Tech

MAY 29-30th 2006

RTE

**Auditorium Tour Initiale – First Floor
1, terrasse Bellini Paris - La Défense**

[Subway line 1– Station : Esplanade de la Défense](#)

For technical questions:

Mrs Anne-Marie DENIS Tel : 33 (1) 39 24 41 14

For practical questions:

Mrs Mathilde PRUDHOMME Tel : 33 (1) 39 24 40 81

Your questions by e-mail to:

RTE-FCENT-WORKSHOP-ROBUST-METHODS@rte-france.com



Monday 29th May 2006

7:45/8:15 AM	<i>Welcome Coffee</i>
8:15/8:30 AM	Marie-Pierre Bongrain and Mark O'Malley – Welcome speeches
8:30/9:00 AM	Introductory speech Patrick Panciatici RTE, Versailles, France
	Session 1: The Need of Robust State Estimation – Practical Issues Chairman: Lamine Mili, Virginia Tech, USA
9:00/9:30 AM	<i>Practical Experience with State Estimation.</i> Serge Lefebvre Hydro-Quebec and IREQ, Canada.
9:30/10:00 AM:	<i>State Estimation: Reality Check and Practical Considerations.</i> Nisheeth Singh ETRANS, Laufenburg, Switzerland.
10:00/10:30 AM	<i>Power System State Estimator Practical Issues</i> Ali Ghassemian. Siemens, Minneapolis, MN, USA
10:30/10:45 AM	Break
	Session 2: Robust State Estimation – Methods and Algorithms – Part 1 Chairman: Rafael Lopez, AREVA, France
10:45/11:15 AM	<i>The Nordic Power System- the Status Today and Future Needs for the Robust State Estimation.</i> Liisa Haarla Helsinki University of Technology, Finland
11:15/11:45 AM	<i>Enhancing robustness in State Estimation : RTE's Experience</i> Benoit Delourme RTE, Versailles, France.
11:45/12:15 AM	<i>Orthogonal Iteratively Re-weighted Least Squares State Estimation with Equality Constraints – Brazilian State Utility Experience</i> Robson C. Pires Federal University of Itajubá, Brazil.
12:15/1:30 PM	Lunch
	Session 3: Robust State Estimation – Methods and Algorithms – Part 2 Chairman: Volker Bühner, EUS GmbH, Germany
1:30/2:00 PM	<i>Recent Experiences and Trends with State Estimation in Very Large Networks.</i> Rafael Lopez, AREVA, France.
2:00/2:30 PM	<i>State Estimation in Power Factory: Algorithmic Aspects.</i> Jochen Alber DIgSILENT GmbH, Germany
2:30/3:00 PM	<i>Memory Usage and Search Breadth in the Identification of Multiple Interacting Bad Data.</i> Mario Montagna University of Pavia, Italy
3:00/3:30 PM	Break
	Session 4: Parameter and Topology Error Identification Chairman: Saladin Sabbagh, NGrid, UK
3:30/4:00 PM	<i>Improved State Estimation by Efficient Detection and Correction of Parameter Errors</i> Ali Abur Northeastern University, Boston, Massachusetts, USA
4:00/4:30 PM	<i>Topology Errors and State Estimation in Deregulated Networks</i> Paul Davis, Worcester Polytechnic Institute, Worcester, MA, USA
4:30/5:00 PM:	<i>Influence of Parameter Accuracy on Estimated Resistive Losses</i> Stéphane Fliscounakis, RTE, Versailles, France.
7:00/9:00 PM	<i>Dinner at “Ciel de Paris” – Tour Montparnasse 56th floor - Paris</i>



Tuesday 30th May 2006

8:00/8:30 AM

Coffee

Session 5: The Need of Robust Load Forecasting – Practical Issues
Chairman: Liisa Haarla, Helsinki University of Technology, Finland

8:30/9:00 AM

Industrial Experiences with an Integrated Robust Forecasting Method Covering Electricity, Gas and Heat.
Volker Bühner, EUS GmbH, Germany

9:00/9:30 PM

Time Series Modeling of Summer 2000 California Electricity Prices and Underscheduling Load
George Gross, University of Illinois at Urbana-Champaign, USA

9:30/10:00 AM

A Practical Approach to Electricity Demand Forecasting in Great Britain
Saladin Sabbagh, National Grid, UK

10:00/10:30 AM

A Practical approach to Energy Forecasting in the Short Term
Shanti Majithia, National Grid, UK

10:30/10:45 AM

Break

Session 6: Robust Load Forecasting – Methods and Algorithms
Chairman: Christophe Croux, Leuven, Belgium

10:45/11:15 AM

A Comparison of Univariate Methods for Forecasting Electricity Demand Up to a Day Ahead
James W. Taylor, University of Oxford, City University, UK

11:15/11:45 PM

Robust Statistical Methods for Electricity Load Forecasting
Marcelo C. Medeiros Pontifical Catholic University of Rio de Janeiro, Brazil.

11:45/12:15 PM

Outlier Detection by Boosting Regression Trees
Nathalie Cheze Paris X Nanterre, France.

12:15/1:30 PM

Lunch

Session 7: Robust Time Series Modeling
Chairman: M. Montagna, University of Pavia, Italy

1:30/2:00 AM

Outliers Detection in Electricity Demand Estimation
Pierre Agache, RTE, Versailles, France.

2:00/2:30 AM

Robust Short-Term Load Forecasting Using Projection Statistics and Kalman Filtering
Lamine Mili, Virginia Tech, USA

2:30/3:00 PM

Robust Estimation of the Vector Autoregressive Model by a Least Trimmed Squares Procedure
Christophe Croux, Catholic University of Leuven, Belgium.

3:00/3:30 PM

Asymptotic Properties of Linear Predictors of Long-Memory Times Series
Pascal Bondon, Laboratoire des Signaux et Systèmes, Gif S/Yvette, France.

3:30/3:50 PM

Break

Session 8: Randomized and Regression Trees
Chairman: Paul Davis, Worcester Polytechnic Institute, Worcester, USA

3:50/4:20 PM

Kernel versus MAVE Forecasting in Time Series: a Computational Point of View
Vincent Lefieux, RTE, Versailles, France

4:20/4:50 PM

Ensembles of Extremely Randomized Trees and their Applications
Louis Wehenkel, University of Liège, Belgium.

Session 9: Wrap up Session

4:50/5:10 PM

Marie-Pierre Bongrain and Mark O'Malley



HOTEL INFORMATION

*Rooms have been pre-reserved at the hotel IBIS La Defense Courbevoie.
If you wish to stay in this hotel, please return the registration form below by 28th April 2006 to:*

HOTEL IBIS LA DEFENSE COURBEVOIE
39 Quai du Président Paul Doumer
92400 COURBEVOIE
Tel : 33 (1) 49 97 05 50
Fax : 33 (1) 49 97 07 17

By phone don't forget to mention "Workshop RTE"

If you stay at "Hotel IBIS" you have to book and pay directly to the hotel

- 28th May : 49 €/night
- 29th May : 105 € /night
- 30th May : 105 € / night
- breakfast 6,50 €/per day

Accommodation required from: _____ May 2006 till _____ May 2006 → night(s)

<http://hotel IBIS Courbevoie La Défense>

Name:	
Company:	
Address:	
E-mail:	
Tel. +	Fax: +