CORTEX
Core monitoring techniques and experimental validation and demonstration

Final CORTEX workshop

"Demonstration of the neutron noise-based core diagnostics techniques developed in CORTEX on plant data"

June 21-22, 2021
Online

June 21, 2021 – CORTEX in a nutshell

08:30 – 09:00: **Welcome and project overview**
(C. Demazière, Chalmers University of Technology, Sweden)

09:00 – 09:30: **Theoretical basis of neutron noise and core diagnostics**
(C. Demazière, Chalmers University of Technology, Sweden)

09:00 – 11:00: **Development, verification and validation of neutron noise-specific modelling tools**

- 09:00 – 09:45: **Overview of the modelling tools used or developed in CORTEX and their verification**
(P. Vinai, Chalmers University of Technology, Sweden)
- 09:45 – 10:45: Break
- 10:45 – 11:00: **Overview of the validation exercises undertaken in CORTEX**
(M. Hursin, Ecole Polytechnique Fédérale de Lausanne, Switzerland)

11:00 – 11:45: **Development of advanced signal analysis and machine learning techniques in support to core diagnostics**
(S. Kollias, University of Lincoln, United Kingdom)

11:45 – 12:30: **Questions and wrap-up**
(C. Demazière, Chalmers University of Technology, Sweden)

June 22, 2021 - Neutron noise-based core diagnostics applied to commercial nuclear reactors

08:30 – 08:35: **Welcome and introduction**
(J. Herb, Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH, Germany)

08:35 – 09:05: **Required instrumentation and data acquisition system**
(G. Girardin, Kernkraftwerk Gösge-Daniken AG, Switzerland)

09:05 – 09:15:	**Required data for modelling the reactor transfer function** (C. Demazière, Chalmers University of Technology, Sweden)
09:15 – 09:45:	**Necessary signal processing** (C. Montalvo, Universidad Politécnica de Madrid, Spain)
09:45 – 10:15:	Break
10:15 – 11:45:	**Machine learning architectures versus diagnostic tasks** (G. Leontidis, University of Aberdeen, United Kingdom; M. Yu, University of Lincoln, United Kingdom; G. Alexandridis, Institute of Communication and Computer Systems, Greece)
11:45 – 12:15:	**Examples of applications on commercial reactors within CORTEX** (J. Herb, Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH, Germany)
12:15 – 12:45:	**Questions and wrap-up** (J. Herb, Gesellschaft für Anlagen- und Reaktorsicherheit (GRS) gGmbH, Germany; C. Demazière, Chalmers University of Technology, Sweden)

All times indicated are in the CEST timezone (GMT+2).