

# AISSAI Anomaly Detection Workshop

4 - 7 March 2024, Clermont-Ferrand - France

## Monday - 4 March 2024

### Session 1

**Chair: Vincent Barra**

**Questions support: Eva Mayer**

09:00h - 09:30h	Arrival of Participants
09:30h - 09:55h	Julien Donini <i>Welcome remarks and the history of AISSAI</i>
09:55h - 10:40h	Mikael Kuusela <i>(Invited) A Statistician's View on Model-Independent Searches of New Physics at the Large Hadron Collider</i>
10:40h - 11:10h	Coffee break
11:10h - 11:35h	Tommaso Dorigo <i>RanBox: Anomaly Detection in the Copula Space</i>
11:35h - 12:00h	Sabine Kraml <i>Statistically learning dispersed new physics at the LHC</i>
12:00h - 12:25h	David Rousseau <i>Summary of the AISSAI workshop on AI and the Uncertainty Challenge in Fundamental Physics</i>
12:25h - 12:40h	Official picture

**12:40h - 14:00h Lunch at Salle Grands Jeux**

### Session 2

**Chair: Paula Sanchez Saez**

**Questions support: Etienne Russeil**

14:00h - 14:45h	Konstantin Malanchev <i>(Invited) Mysterious Lights: anomaly detection in astronomy</i>
14:45h - 15:10h	Priscila Pessi <i>Automatic detection of hostless transients in the FINK broker</i>
15:10h - 15:14h	Rafal Maselek <i>(Lightning talk) Enhancing Monojet searches with ML</i>
15:14h - 15:18h	Bruna Pascual <i>(Lightning talk) Accelerating the search for mass bumps using the</i>

	<i>Data-Directed Paradigm</i>
15:18h - 15:22h	Navid Rabbani <i>(Lightning talk) Integrating Noisy Label Learning and Confidence Estimation</i>
15:22h - 15:26h	Tom Schumann <i>(Lightning talk) A deep learning approach for videobased traffic anomaly detection</i>
15:26h - 15:30h	Maria Pruzhinskaya <i>(Lightning talk) Anomaly Detection for Fink</i>
15:30h - 15:34h	Jiechieu Kamani Florentin Flambeau <i>(Lightning talk) SEDAF : Prototype of a Real-Time Explainable Anomaly Detection System on Multivariate Data Stream</i>
15:34h - 16:05h	<b>Poster dedicated</b> Coffee break
16:05h - 16:30h	Jiechieu Kamani Florentin Flambeau <i>DASMA : Towards Real-time and Explainable Anomaly Detection on Data Stream</i>
16:30h - 16:55h	Artur Lobanov <i>Realtime Anomaly Detection with the CMS Level-1 Global Trigger Test Crate</i>
16:55h - 17:20h	Marco Letizia <i>Learning new physics with a (kernel) machine</i>

**19:00h - 21:00h Welcome cocktail at Hotel Saint Mart**

## **Tuesday - 5 March 2024**

### **Session 3**

**Chair: Tommaso Dorigo**

**Questions support: Federico Nardi**

09:00h - 09:30h	Arrival of Participants
09:30h - 10:15h	Mazen Alamir <i>(Invited) Blind Anomaly Detection in Industrial Time-series</i>
10:15h - 10:40h	Jean-Michel Becu <i>Anomaly detection for complex equipment monitoring</i>
10:40h - 11:10h	Coffee break

11:10h - 11:35h	Paula Sanchez Saez <i>Searching for changing-state AGNs in massive datasets with anomaly detection</i>
11:35h - 12:00h	Gabriella Contardo <i>Leveraging Robust Machine Learning Methods for Targeted Anomaly Searches</i>
12:00h - 12:25h	Aleksandra Avdeeva <i>Looking for unique objects with excess UV emission in modern large-scale sky surveys</i>

**12:25h - 14:00h Lunch at Salle Grands Jeux**

#### **Session 4**

**Chair: Maria Pruzhinskaya**

**Questions support: Aleksandra Avdeeva**

14:00h - 14:25h	Louis Vaslin <i>Anomaly Detection algorithms applied to the Quality Control of detector components</i>
14:25h - 14:50h	Stefano Cavuoti <i>Identification of anomalous epochs in Astronomical Time Series through Transfer Learning</i>
14:50h - 15:35h	Gregor Kasieczka (Tutorial) Lecture and Tutorial on Generative Anomaly Detection - part I
15:35h - 16:05h	Coffee break
16:05h - 17:20h	Gregor Kasieczka (Tutorial) Lecture and Tutorial on Generative Anomaly Detection - part II

## **Wednesday - 6 March 2024**

#### **Session 5**

**Chair: Adnan Ghribi**

**Questions support: Anastasiia Voloshina**

09:00h - 09:30h	Arrival of Participants
09:30h - 10:40h	Konstantin Malanchev (Tutorial) <i>Active Anomaly Detection - part I</i>
10:40h - 11:10h	Coffee break

11:10h - 12:00h	Konstantin Malanchev <i>(Tutorial) Active Anomaly Detection - part I</i>
12:00h - 12:25h	Lilianne Nakazono <i>Searching for rare objects with narrow-band photometry from S-PLUS</i>

**12:25h - 14:00h Lunch at Salle Grands Jeux**

### Session 6

**Chair: Pietro Vischia**

**Questions support: Abdelhamid Haddad**

14:00h - 14:45h	Shikma Bressler <i>(Invited) Anomaly detection in particle physics</i>
14:45h - 15:10h	Adrian Rubio Jimenez <i>Turning optimal classifiers into anomaly detectors</i>
15:10h - 15:35h	Louis Moureaux <i>Model-agnostic search for dijet resonances with anomalous jet substructure with the CMS detector</i>
15:35h - 16:05h	Coffee break
16:05h - 16:30h	Roberto Seidita <i>Advanced anomaly detection algorithms to search for semivisible jets in the CMS experiment at the CERN LHC</i>
16:30h - 16:55h	Louis Vaslin <i>Anomaly Detection at the LHC with GAN-AE algorithm</i>

**17:30h - 18:00h Transport from Casino de Royat to Clermont city centre**

**18:00h - 19:30h Guided tour at the old city**

**19:30h - 22:30h - Conference dinner at Brasserie Madeleine**

## Thursday - 7 March 2024

### Session 7

**Chair: David Rousseau**

**Questions support: Eva Mayer**

09:00h - 09:30h	Arrival of Participants
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09:30h - 10:15h	Carole Lartzien <i>(Invited) A review of unsupervised anomaly detection models for neuroimaging applications</i>
10:15h - 10:40h	Florian Josselin <i>Real-time Anomaly Detection in Injection Molding: Leveraging Autoencoder Models To Define The Future Of Quality Control</i>
10:40h - 11:10h	Coffee break
11:10h - 11:35h	Anastasiia Voloshina <i>M-dwarf flares in the Zwicky Transient Facility data and what we can learn from it</i>
11:35h - 12:00h	Emmanuel Gangler <i>Signatures to help interpretability of anomalies</i>
12:00h - 12:25h	Etienne Russeil <i>Multiview Symbolic Regression. How to learn laws from examples</i>

**12:25h - 14:00h Lunch at the Balcony**

### **Session 8**

**Chair: Emmanuel Gangler**

**Questions support: Abdelhamid Haddad**

14:00h - 14:25h	Shikma Bressler <i>Exploiting the discovery potential of the LHC data using the Data Directed Paradigm</i>
14:25h - 14:50h	Eva Mayer <i>Accelerating the search for mass bumps using the Data-Directed Paradigm</i>
14:50h - 15:15h	Federica Maria Simone <i>Anomaly detection for data quality monitoring of the CMS detector</i>
15:40h - 16:00h	Final remarks