



# Big Data Science in Astroparticle Research - Workshop

## Tuesday 19 February 2019

### Deep Learning (09:00-10:35)

| time  | [id] title  | presenter                  |
|-------|---|----------------------------|
| 09:00 | [5] Welcome at the RWTH Aachen University   | Prof. HONERKAMP, Carsten   |
| 09:19 | [6] Deep Neural Networks for Energy and Position Reconstruction in EXO-200  | Mr. ZIEGLER, Tobias        |
| 09:38 | [7] A Deep Neural Network for Pixel-Level Electromagnetic Particle Identification in the MicroBooNE Lar TPC (tbc) | Mr. PORZIO, Davide         |
| 09:57 | [8] Deep learning techniques applied to the physics of extensive air showers                                      | Mr. CARCELLER, Juan Miguel |
| 10:16 | [9] Inspection of the AIXNET network for air shower reconstruction  | Mr. EICH, Niclas           |

### Deep Learning (11:05-13:00)

| time  | [id] title  | presenter              |
|-------|---|------------------------|
| 11:05 | [10] Application of Deep Learning methods to analysis of Imaging Atmospheric Cherenkov Telescopes data            | Mr. BÜCHELE, Matthias  |
| 11:24 | [11] Recovery of Radio Signals from Cosmic Ray Induced Air Showers with Deep Learning                             | SCHLÜTER, Felix        |
| 11:43 | [27] Reconstruction of air-shower radio pulses from real Tunka-Rex background with autoencoder network            | Mr. BEZYAZEEKOV, Pavel |
| 12:02 | [23] Event classification in Compton-Pair telescopes using Deep Learning Techniques                               | Mr. LOMMLER, Jan Peter |
| 12:21 | [12] Cascade Reconstruction in IceCube using Generative Networks  | HUENNEFELD, Mirco      |
| 12:40 | [13] Precise simulation of electromagnetic calorimeter showers using a Wasserstein Generative Adversarial Network | Mr. QUAST, Thorben     |

### Deep Learning (14:30-15:50)

| time  | [id] title   | presenter               |
|-------|--|-------------------------|
| 14:30 | [14] Deep Learning and Mathematical Modeling: Taking the Best out of Both Worlds       | Prof. KUTYNIOK, Gitta   |
| 15:10 | [15] Contracting alignment patterns of mixed composition nuclei                        | WIRTZ, Marcus           |
| 15:30 | [16] Exploring Optical Properties of Antarctic Ice with IceCube Using Gradient Descent | Mr. HARNISCH, Alexander |