List of Abbreviations and Acronyms

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|  |  |
| ALICE | A Large Ion Collider Experiment |
| TRD | Transition Radiation Detector |
| CERN | European Organization for Nuclear Research |
| QGP | Quark Gluon Plasma |
| LHC | Large Hadron Collider |
| WLCG | Worldwide LHC Computing Grid |
| QCD | Quantum Chromodynamics |
| ML | Machine Learning |
| PbPb | Lead-Lead Collisions |
|  | Electron |
|  | Pion |
| QED | Quantum Electrodynamics |
| p | Proton |
| n | Neutron |
|  | Electron Neutrino |
|  | Muon Neutrino |
|  | Tau Neutrino |
| LSTM | Long Short-Term Memory |
| VAEs | Variational Autoencoders |
| GANs | Generative Adversarial Networks |
| nσ-electron | The TPC’s estimate for how many standard deviations away from the expected signal for an electron a particle is |
| eV | Electron Volt |
| u | Up quark |
| d | Down quark |
| s | Strange quark |
| c | Charm quark |
| b | Bottom quark |
| t | Top Quark |
|  | Muon |
|  | Tau lepton |
| EWT | Electroweak Theory |
| c | The speed of light |
|  | Vacuum expectation value |
| QFT | Quantum Field Theory |
| g | Coupling strength of standard model interaction vertices |
|  | Characteristic mean lifetime of subatomic particles |
| HEP | High Energy Physics |
| fm | Femtometer |
| s | Second |
| T | Temperature |
| UNESCO |  |
| TB | Terabytes |
| RAM | Random Access Memory |
| GiB/s | Gigabytes per second |
| RHIC | Relativistic Heavy Ion Collider |
| Z | Atomic number |
|  | Hydrogen |
|  | Centre of Mass Energy |
| p | Momentum |
| pPb | Proton-Lead Collisions |
| Pb | Lead |
| PS | Proton Synchrotron |
| SPS | Super Proton Synchrotron |
| NbTi | Niobium-titanium |
| K | Degrees Kelvin |
| °C | Degrees Celcius |
| T | Tesla |
|  | Vacuum Pressure |
|  | Atmosphere |
| ATLAS |  |
| CMS | Compact Muon Solenoid |
| LHCb |  |
| TOTEM |  |
| LHCf |  |
| MoEDAL |  |
| OOP | Object Oriented Programming |
| GNU |  |
| OS | Operating System |
|  | Critical Temperature |
| m | Meter |
| ITS | Inner Tracking System |
| SPD | Silicon Pixel Detectors |
| SDD | Silicon Drift Detectors |
| SSD | Silicon Strip Detectors |
| dE/dx |  |
|  | Transverse Momentum |
| TPC | Time Projection Chamber |
| TOF | Time of Flight |
| m² | Square meters |
| ps | Picoseconds |
| HMPID | Ring Imaging Cherenkov Detectors |
|  | Xenon - Carbon Dioxide Gas |
| PHOS |  |
| EmCal |  |
|  |  |
| V0 |  |
| T0 |  |
| PMD |  |
| FMD |  |
| ZDC |  |
| cm | Centimetre |
|  | Pseudorapidity |
| MWPC | Multi-wire Proportional Chamber |
| ns | Nanoseconds |
| ADC |  |
| γ | Relativistic Factor |
| LQ1D | One-dimensional likelihood |
| LQ2D | Two-dimensional likelihood |
| AI | Artificial Intelligence |
| MLPs | Multilayer Perceptrons |
| ReLU | Rectified Linear Unit |
| J | Objective function |
| SGD | Stochastic Gradient Descent |
|  | Learning rate at iteration i |
|  | Momentum decay parameter |
| **v** | Velocity |
|  | Parameter set |
|  | gradient |
|  | Interim parameter update |
|  | Length scale |
| Adam | Adaptive Moments |
| CNN | Convolutional Neural Network |
| RNN | Recurrent Neural Network |
| ANN | Artificial Neural Network |
|  | State of a dynamical system at timestep t |
| Z | Latent space |
| I | Identity matrix |
|  | Kullback-Leibler divergence |
|  | Mean |
|  | Multidimensional standard deviation |
| σ | Standard deviation |
| D | Discriminative Neural Network |
| G | Generative Neural Network |
| BiGANs | Bidirectional Generative Adversarial Networks |
| LSGANs | Least Squares Generative Adversarial Networks |
|  | Null Hypothesis |
| t | Test statistic |
|  | Threshold value for test statistic |
|  | Significance level |
|  | Power |
|  | Electron Efficiency |
|  | Pion Efficiency |
| PDG | Particle Data Group |
|  |  |
|  | Learning rate |
|  | Skewness |
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