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Review of the Dark Machine Anomaly Score Challenge II

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We describe the outcome of a data challenge conducted as part of the Dark Machines Initiative and the Les Houches 2019 workshop on Physics at TeV colliders. The challenge aims at detecting signals of new physics at the LHC using unsupervised learning algorithms. We define and describe a large benchmark dataset, consisting of > 1 Billion simulated LHC events. We then review a wide range of anomaly detection algorithms and measure their performance on the data challenge. We then assess the best-performing models on a still blinded dataset. Similarities between the best-performing models are observed and discussed.

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