Ways of seeing: maximising the discovery potential of the Large Hadron Collider

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The Large Hadron Collider at CERN is entering Run 3 of operations, and the search for physics beyond the Standard Model remains a key part of the physics programme. I will show the sorts of physics that are currently evading LHC searches, and will present new ideas for how to extend the reach of particle searches with the ATLAS and CMS detectors. These are based on dimensional reduction of global fit results, unsupervised machine learning [1] and graph network analysis [2].

[1] M. Beekveld et al, *JHEP* **09**, 024 (2021).

[2] A. Mullin, S. Nicholls, H. Pacey, M. Parker, M. White, *JHEP* **02**, 160 (2021).