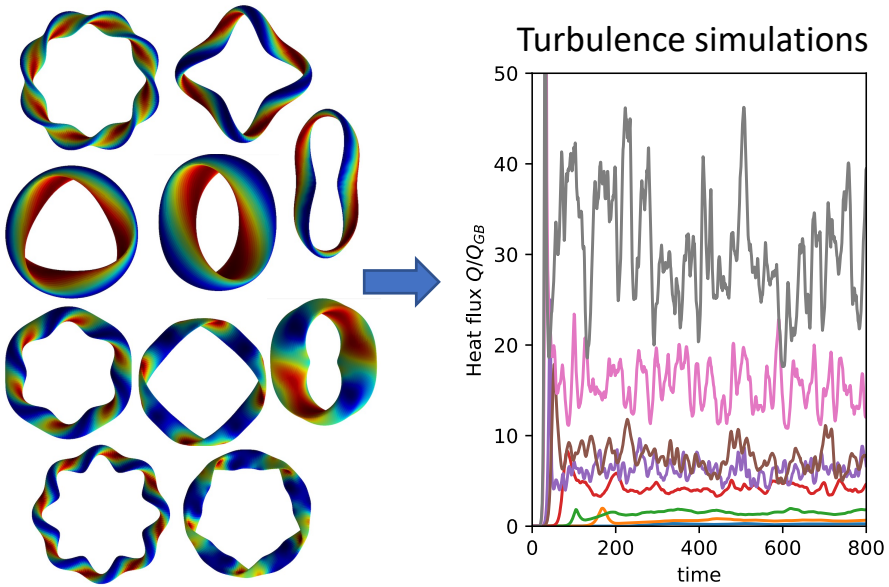
New dataset of >200,000 nonlinear gyrokinetic simulations of ITG turbulence in diverse stellarator geometries



M Landreman, J Y Choi, C Alves, P Balaprakash, R M Churchill , R Conlin, G Roberg-Clark **arXiv:2502.11657**

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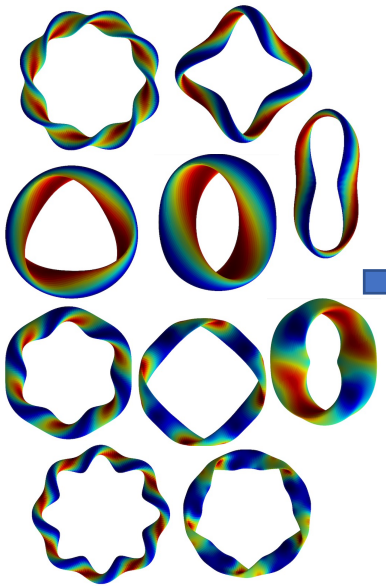
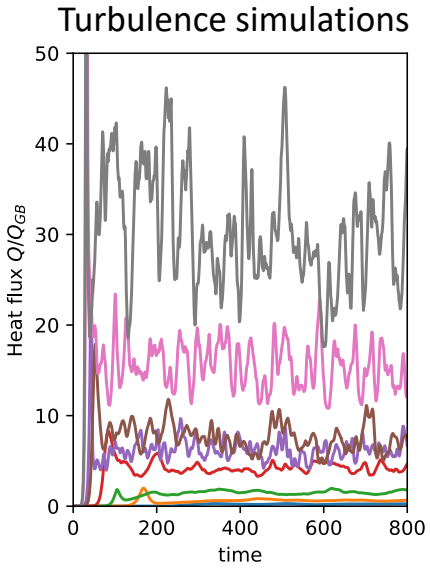
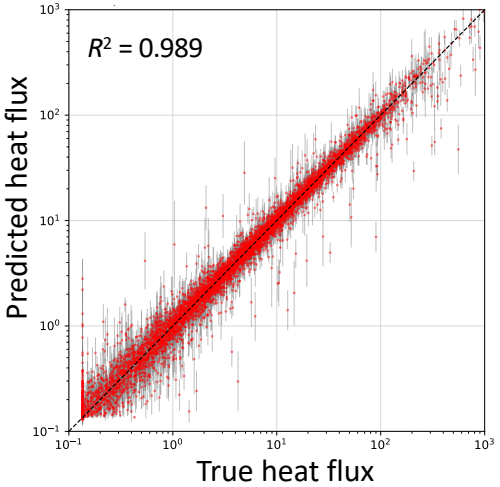




Neural network



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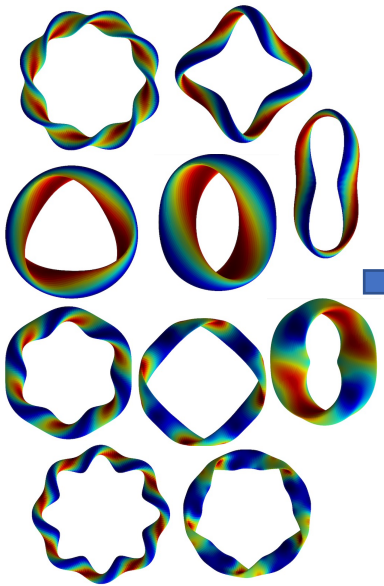
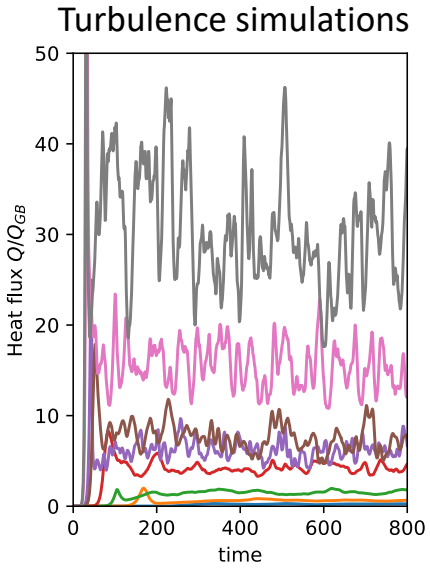
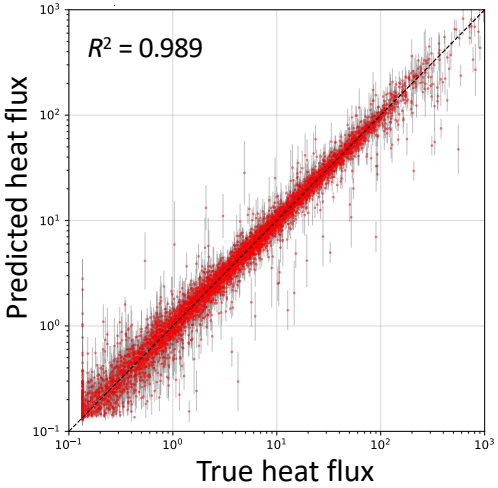




Neural network

Interpretable machine learning



$$\text{mean}\left(\left[\Theta\left(\mathbf{B}\times\kappa\cdot\nabla\alpha\right)+0.2\right]|\nabla\psi|/B\right)$$

Bad curvature

Flux surface compression

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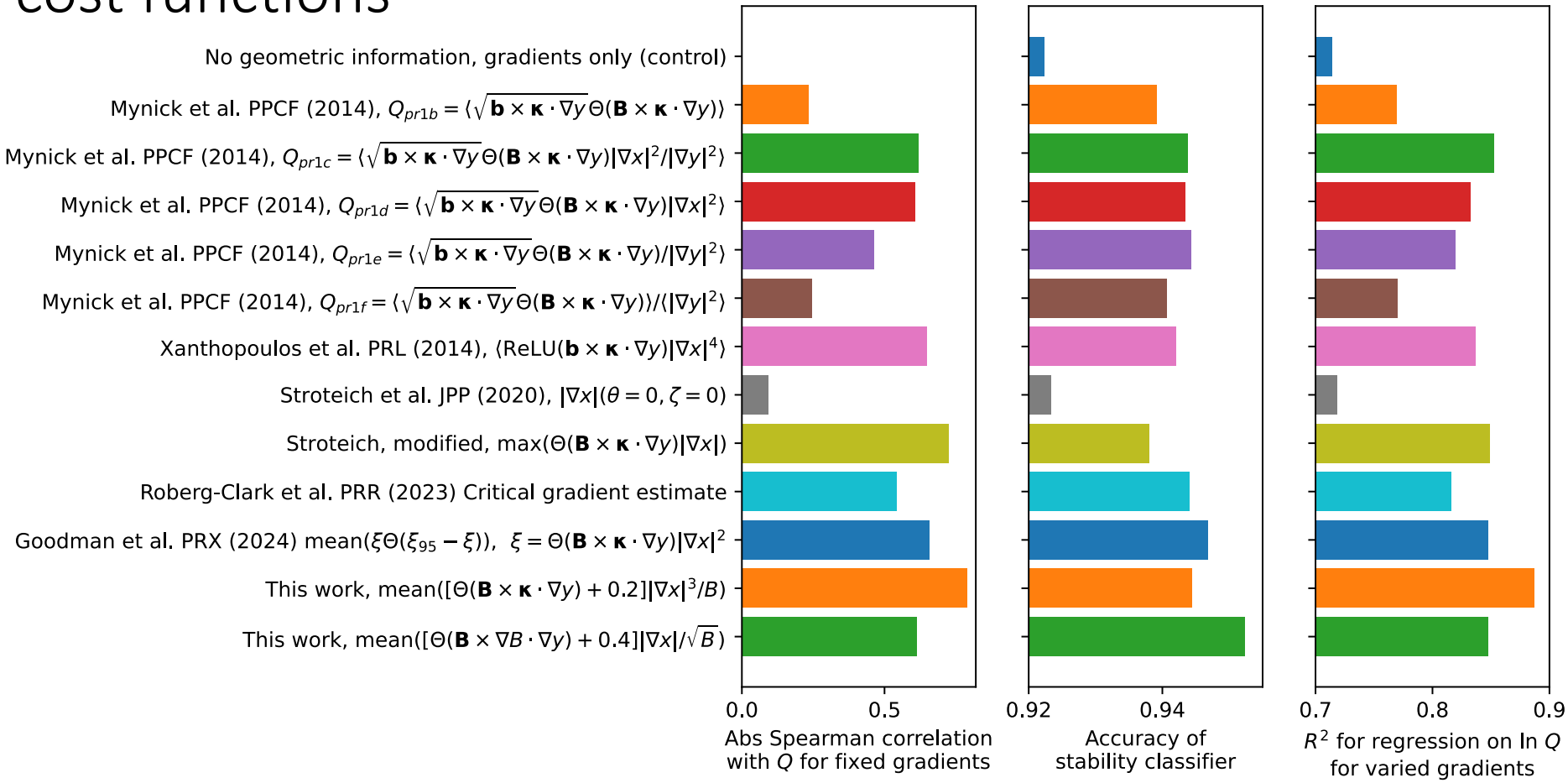
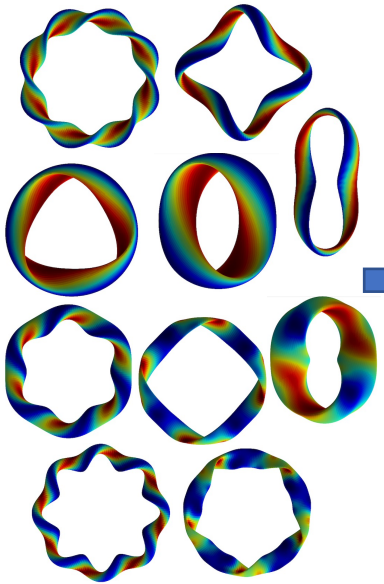
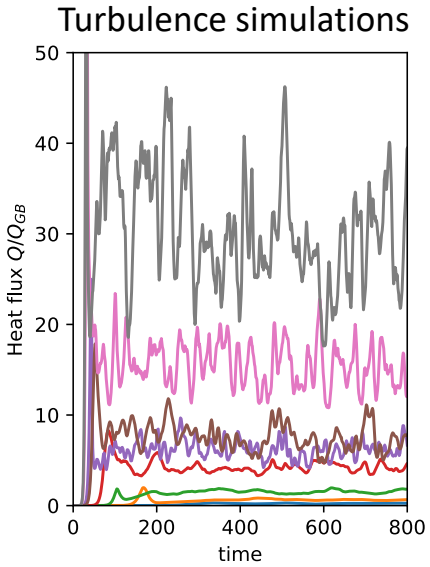
The data can also be used to test proposed turbulence cost functions



Paper: arXiv:2502.11657

Dataset doi:10.5281/zenodo.14867776





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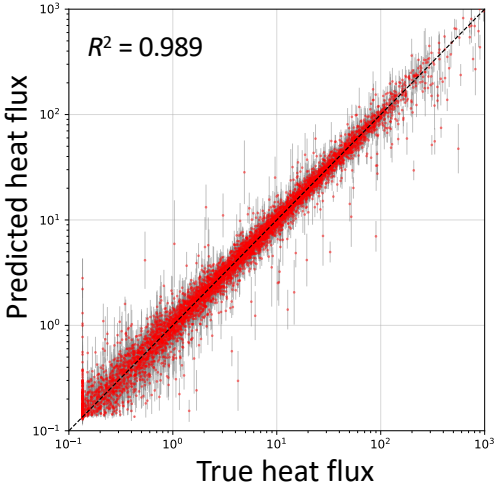

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