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*On the Statistical Analysis of Functional Data Arising from Designed Experiments*

We investigate various methods for testing whether two groups of curves are statistically significantly different, with the motivation to apply the techniques to the analysis of data arising from designed experiments. We propose a set of tests based on pairwise differences between individual curves. Our objective is to compare the power and robustness of a variety of tests, including a collection of permutation tests. We illustrate the application of these tests in the context of a designed  $2^4$  factorial experiment with a case study using data provided by NASA.