



# Warped Functional Analysis of Variance

Daniel Gervini, Patrick A. Carter

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This article presents a functional Analysis of Variance model that explicitly incorporates phase variability through a time-warping component, allowing for a unified and parsimonious approach to estimation and inference in presence of amplitude and time variability. The focus is on the single-random-factor model but the approach can be easily generalized to more complex ANOVA models. The behavior of the estimators is studied by simulation and an application to the analysis of growth curves of flour beetles is presented. Although the model assumes a continuous stochastic process underlying the observed trajectories, continuity of the actual data is not required; the method can be applied to data that is only sparsely observed, as it is usually the case in longitudinal studies.

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