

FUNCTIONAL EQUIVARIANCE AND MODIFIED VECTOR FIELDS

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In a recent paper with Robert McLachlan (Found. Comput. Math., 2022), we introduced the notion of functional equivariance for numerical integrators. This generalized previous work on numerical preservation of linear and quadratic invariants by characterizing methods that preserve the evolution of not-necessarily-invariant linear and quadratic observables, with applications to local conservation laws in numerical PDEs. This talk discusses some new work relating functional equivariance to properties of modified vector fields, generalizing previous results for invariant-preserving methods.

Joint work with Sanah Suri (Washington University in St. Louis).