

Analysis of the Constrained Runge Algorithm

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In this talk, I will introduce and analyze a class of iterative reduction methods developed to enable efficient, equation-free implementations of the Projective Integration schemes and recently employed in hybrid modelling problems. I will first explain the principle underlying these methods and then establish the existence, for each method, of a fixed point corresponding to a slow, approximately invariant manifold. I will then examine the accuracy of this fixed point in the context of geometric singular perturbation theory and derive its stability properties. I will conclude the talk with a short discussion concerning the extension of this analysis to more general multiscale systems.

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