
Adaptive multilevel splitting techniques

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Abstract

We will discuss algorithms to sample rare events and which are based on interacting replicas. More precisely, we will discuss the Adaptive Multilevel Splitting algorithm which has been proposed by F. Cérou and A. Guyader in 2007. We will discuss the efficiency of the algorithm and present some results concerning the unbiasedness of the estimator, whatever the choice of the importance function and the number of replicas. This has practical consequences on the use of this algorithm, which will be illustrated on various numerical experiments. References:

D. Aristoff, T. Lelièvre, C.G. Mayne and I. Teo, Adaptive multilevel splitting in molecular dynamics simulations, *ESAIM Proceedings and Surveys*, 48, 215-225, (2015).

C.-E. Bréhier, T. Lelièvre and M. Rousset, Analysis of Adaptive Multilevel Splitting algorithms in an idealized case, to appear in *ESAIM P&S*.

C.-E. Bréhier, M. Gazeau, L. Goudenège, T. Lelièvre and M. Rousset, Unbiasedness of some generalized Adaptive Multilevel Splitting algorithms, <http://arxiv.org/abs/1505.02674>

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