Supplementary material for: Continuous Time Analysis of Momentum Methods

Remark 1 *Since publication of this article in Kovachki and Stuart (2021), we became aware of related, and earlier, work by Farazmand (2018). Farazmand starts from the Bregman Lagrangian introduced in Wibisono et al. (2016) and uses ideas from geometric singular perturbation theory to derive an invariant manifold. The work leads to a more general description of the invariant manifold than the one given by our equation (20). Farazmand's work was published in Farazmand (2020).*

References

Mohammad Farazmand. Multiscale analysis of accelerated gradient methods. *arXiv:1807.11354*, 2018.

Mohammad Farazmand. Multiscale analysis of accelerated gradient methods. *SIAM Journal on Optimization*, 30(3):2337–2354, 2020.

Nikola B. Kovachki and Andrew M. Stuart. Continuous time analysis of momentum methods. *Journal of Machine Learning Research*, 22(17):1–40, 2021. URL `http://jmlr.org/papers/v22/19-466.html`.

Andre Wibisono, Ashia C Wilson, and Michael I Jordan. A variational perspective on accelerated methods in optimization. *proceedings of the National Academy of Sciences*, 113(47):E7351–E7358, 2016.