

On optimal error rates for strong approximation of SDEs with a Hölder-continuous drift coefficient

Simon Ellinger

University of Passau

`simon.ellinger@uni-passau.de`

Coauthor(s): Thomas Müller-Gronbach and Larisa Yaroslavtseva

We discuss the complexity of pathwise approximation of SDEs $dX_t = \mu(X_t) dt + dW_t$ at the final time in the case when μ is s -Hölder-continuous for $s \in (0, 1]$. Recently, it has been proven in [1] that the equidistant Euler scheme reaches under the above regularity condition an L^p -error rate of at least $(1+s)/2$, up to some small $\varepsilon \in (0, \infty)$, in terms of the number of evaluations of the driving Brownian motion W . We show that this rate cannot be improved in general.

- [1] Butkovsky, O., Dareiotis, K., & Gerencsér, M. (2021). Approximation of SDEs: a stochastic sewing approach. *Probability Theory and Related Fields*, 181(4), 975–1034.