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A course on rough paths.

With an introduction to regularity structures. Second edition of [[MR3289027](#)]. [Universitext](#).*Springer, Cham*, [2020], ©2020. xvi+346 pp. ISBN: 978-3-030-41556-3;

978-3-030-41555-6

[60Lxx \(34F05 35R60 60Hxx 93E03\)](#)

Since the publishing of the first edition of this book [P. K. Friz and M. Hairer, A course on rough paths, Universitext, Springer, Cham, 2014; [MR3289027](#)] and the discovery of the theory of regularity structures by Martin Hairer [see M. Hairer, *Invent. Math.* 198 (2014), no. 2, 269–504; [MR3274562](#)], this theory has kept growing and has eventually established itself as a complete and self-contained solution theory for general singular, subcritical, semilinear (and quasilinear) stochastic partial differential equations.

In this second edition the authors extend the Chapters 13–15 dealing with the theory of regularity structures. In particular, the theory is presented in a more self-contained way and the running example of the KPZ equation is further discussed.

Additions to the rough paths theory parts of the book are made as well. Many new examples are given and the theory of low regularity rough paths are further explained (even though, for pedagogical reasons, the main focus of the book remains the explanation of the theory for α -Hölder paths where $\alpha > 1/3$).

The already rich bibliography has been expanded and connections with the latest advancements have been made.

Reviewed by [Fabrice Baudoin](#)

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