

# Harmonijska analiza i slučajni procesi

Luka Šimek

Voditelj rada: prof. dr. sc. Nikola Sandrić

Diplomski rad

Prirodoslovno-matematički fakultet — Matematički odsjek  
Sveučilište u Zagrebu

Rujan 2025.

## 1 Samosličnost i FBM





Ayache, A. (2010.). „A mini-course on Wavelets and Fractional Processes”. URL: [https://pro.univ-lille.fr/fileadmin/user\\_upload/pages\\_pros/antoine\\_ayache/COURSE-WavFrac.pdf](https://pro.univ-lille.fr/fileadmin/user_upload/pages_pros/antoine_ayache/COURSE-WavFrac.pdf) (pogledano 7. 7. 2025.).








Ayache, A. i M. S. Taqqu (rujan 2003.). „Rate Optimality of Wavelet Series Approximations of Fractional Brownian Motion”. *Journal of Fourier Analysis and Applications* 9, str. 451–471.








Daubechies, I. (listopad 1988.). „Orthonormal bases of compactly supported wavelets”. *Communications on Pure and Applied Mathematics* 41.7, str. 909–996.



— (1992.). *Ten lectures on wavelets*. CBMS-NSF Regional conference series in applied mathematics 61. Society for Industrial i Applied Mathematics (SIAM).

-  Diez, A. (2016.). „Lévy's construction of Brownian motion”. URL: <https://perso.eleves.ens-rennes.fr/people/Antoine.Diez/brownienlevy.pdf> (pogledano 7. 7. 2025.).
-  Embrechts, P. i M. Maejima (2002.). *Selfsimilar processes*. Princeton series in applied mathematics. Princeton University Press.
-  Gogić, I. (2025.). *Uvod u funkcionalnu analizu*. URL: <https://web.math.pmf.unizg.hr/~ilja/UFA.pdf> (pogledano 7. 7. 2025.).
-  Kovač, V. (2014.). *Time – frequency analysis and singular integrals*. URL: [https://web.math.pmf.unizg.hr/~vjekovac/files/skrypt\\_V.Kovac\\_UWr.pdf](https://web.math.pmf.unizg.hr/~vjekovac/files/skrypt_V.Kovac_UWr.pdf) (pogledano 7. 7. 2025.).
-  Pipiras, V. i M. S. Taqqu (srpanj 2002.). „Deconvolution of fractional brownian motion”. *Journal of Time Series Analysis* 23.4, str. 487–501. (Pogledano 7. 7. 2025.).

# Bibliografija III

-  Rudin, W. (1987.). *Real and complex analysis*. 3. izdanje. McGraw-Hill.
-  Samko, S. G., A. A. Kilbas i O. I. Marichev (1993.). *Fractional integrals and derivatives: theory and applications*. eng. Gordon i Breach Science Publishers.
-  Sarapa, N. (1980.). *Teorija vjerojatnosti*. Udžbenici Sveučilišta u Zagrebu. Školska knjiga.
-  Sato, K. (1999.). *Lévy processes and infinitely divisible distributions*. Cambridge studies in advanced mathematics 68. Cambridge Univ. Press.
-  Ševčenko, H. (2014.). *Fractional Brownian motion in a nutshell*. URL: <https://arxiv.org/abs/1406.1956> (pogledano 7.7.2025.).