Proof-Based Math Readings
Session: Measure Theoretic Probability*
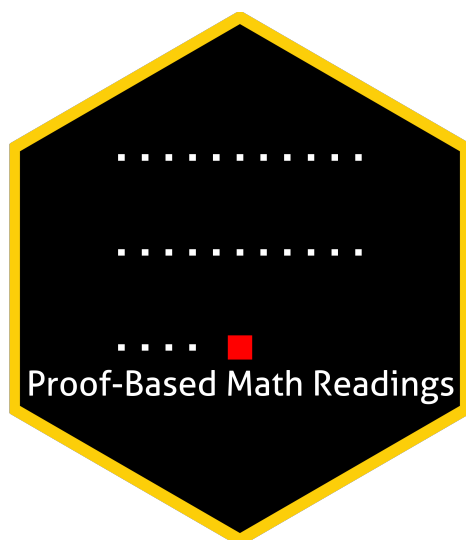
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Proof-Based Math Readings

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0   Motivation

- *Proof-Based Math Readings* is a free, independent online reading group where we study the mathematics required for economics master's and PhD programs through an intuitive approach. Active since May 2023.
- This session of the reading group is on *Measure Theoretic Probability*.

1   Prerequisites

- Proof Techniques and Real Analysis resources below.
- Please use the 🔗 Application Form to join our reading group; you will receive a response within a week.

2   Format

- This session takes 12 weeks. We do not have face-to-face/online meetings due to the size of the group.
- Members read the main book and discuss the topics/exercises in the Proof-Based Math Readings Discord 🎮.

3   Resources

3.1   Main Book and Main Book's Playlist

A First Look at Rigorous Probability Theory - Jeffrey S. Rosenthal (2nd Edition, 2006 or 2020) is our main book for this session because it is well-written and well-structured.

Jem Corcoran's playlist is our main playlist because her narrative is great.

- 📑 A First Look at Rigorous Probability Theory - Jeffrey S. Rosenthal (2nd Edition, 2006 or 2020)
- 📑 A First Look at Rigorous Probability Theory - Jeffrey S. Rosenthal (2nd Edition, 2006 or 2020, Errata)
- 📑 A First Look at Rigorous Probability Theory - Jeffrey S. Rosenthal (2nd Edition, 2006 or 2020, Solutions)
- ▶️ A First Look at Rigorous Probability Theory - Jeffrey S. Rosenthal (2nd Edition, 2006 or 2020, Playlist by J. Corcoran)

3.2   Supplementary

3.2.1   Measure Theoretic Probability

- 📑 Probability: Theory and Examples - Rick Durrett (5th Edition, 2019)
- 📑 Probability: Theory and Examples - Rick Durrett (5th Edition, 2019, Solutions by Hoil Lee, Wonjun Seo)
- ▶️ Probability: Theory and Examples - Rick Durrett (5th Edition, 2019, Solutions by Luke Andrejek)
- ▶️ Measure Theoretic Probability-I - Supriyo Bhar (2021)
- ▶️ Probability Foundations - Krishna Jagannathan (2020)

3.2.2   Proof Techniques

- 📑 Book of Proof - Richard Hammack (3.4 Edition, 2025)
- ▶️ Book of Proof - Richard Hammack (3.4 Edition, 2025, Playlist by Jeremy Teitelbaum)
- ▶️ Book of Proof - Richard Hammack (3.4 Edition, 2025, Playlist by Michael Penn)

3.2.3   Real Analysis

- 📑 Basic Analysis I: Introduction to Real Analysis - Jiri Lebl (Version 6.2, 2025)
- ▶️ Basic Analysis I: Introduction to Real Analysis - Jiri Lebl (Version 6.2, 2025, Playlist by Casey Rodriguez)
- ▶️ Introduction To Metric Spaces - Paige Bright (2023)

4 Reading Schedule

RPT is the abbreviation of **A First Look at Rigorous Probability Theory - Jeffrey S. Rosenthal (2nd Edition, 2006 or 2020)**.

📗 RPT **Week 01-02 📅**

Appendix A: Mathematical Background
Chapter 1: The need for measure theory
Chapter 2: Probability triples

📗 RPT **Week 03-04 📅**

Chapter 3: Further probabilistic foundations
Chapter 4: Expected values

📗 RPT **Week 05-06 📅**

Chapter 5: Inequality and convergence
Chapter 6: Distributions of random variables

📗 RPT **Week 07-08 📅**

Chapter 9: More probability theorems
Chapter 10: Weak convergence

📗 RPT **Week 09-10 📅**

Chapter 11: Characteristic functions

📗 RPT **Week 11-12 📅**

Chapter 12: Decomposition of probability laws
Chapter 13: Conditional probability and expectation

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5 Further Readings (Optional)

Our Measure Theory syllabus at github.com/zekiakyol/proof-based-math-readings