

# Lecture 4: Probability Measure on Infinite Product Space

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# 1 Infinite Product Spaces and the Kolmogorov Extension Theorem

## 1.1 Product $\sigma$ -Algebra

## 1.2 Pre-measures and Hahn-Kolmogorov Theorem

## 1.3 Kolmogorov Extension Theorem

# 2 Lebesgue-Stieltjes Measure

## 2.1 Existence of Lebesgue-Stieltjes Measure

## 2.2 Regularity

## 2.3 Lebesgue-Stieltjes Integration

## 2.4 Connection with Riemann-Stieltjes Integration