

Title: A Hájek–Rényi inequality

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Abstract: In this thesis we study the Hájek–Rényi inequality for mixingales and their special cases. First, we prove the Hájek–Rényi inequality for martingales. Then, we investigate the relationship between the Kolomogorov and Hájek–Rényi inequalities. After that, we prove the law of large numbers using the Hájek–Rényi inequality. We then provide a detailed proof of maximal inequality for mixingales, which we then use to derive the Hájek–Rényi inequality for mixingales. We then apply the inequality to a multitude of special cases of mixingales.

Keywords: Hájek–Rényi inequality, martingales, mixingales, linear process