How to Control a Process to a Goal

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Suppose that you have a fortune of $10 and seek to reach $100 by placing bets at fixed odds on repetitions of a given event such as the appearance of red (or black) on each spin of a roulette wheel. What is the best strategy for you to reach your goal? What strategy will get you there in the least expected time? What if you are competing with another player?

I will discuss these and related problems in both discrete and continuous time.

1. L. E. Dubins and L. J. Savage (1965). *How to Gamble If You Must: Inequalities for Stochastic Processes.* McGraw-Hill.

2. S. N. Ethier (2009). *The Doctrine of Chances: Probabilistic Aspects of Gambling.* Springer.

3. A. Maitra and W. Sudderth (1996). *Discrete Gambling and Stochastic Games.* Springer.

4. L. Pontiggia (2005). Two-person red-and-black with bet dependent win probabilities. *Advances in Applied Probability* 37 75-89.