

# Michigan Math Club

Thursday at 4pm in the Nesbitt Room  
Free Pizza and Pop

## Rental Harmony

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Abstract for 16 February

You and your housemates are moving to a house with rooms of various sizes and features, and are having trouble deciding who should get which room and for what part of the total rent. Is there always a way to partition the rent so that each housemate prefers a different room? As we shall see, with mild assumptions, the answer is yes. This rent-partitioning problem is really a kind of fair-division question. It can be viewed as a generalization of the age-old cake-cutting problem, in which one seeks to divide a cake fairly among several people. In this talk we will explain a powerful approach to fair-division questions that provides a method for achieving approximate envy-free divisions, in which each person feels she received the “best” share. This approach depends on a simple topological-combinatorial result known as Sperner’s lemma.

