摘 要

在日常生活中，人们经常会遇到需要运用概率计算帮助分析的情形。面对这些情形时不难发现，即便待求解的概率问题是已经过简化才从实际中抽象提出的，其中的大多数问题也都是十分复杂，无法轻易计算出结果的。而全概率公式往往被运用于求解这样的复杂事件的概率，它利用了“化零为整”的思想，将问题化繁为简，使得复杂事件的概率计算有了新的思路。本文的目的是对全概率公式在实际生活中的应用进行研究，通过举例进行详细分析，并利用 Python 程序模拟概率事件，帮助验证结论及加深理解。在此基础上归纳总结在实际问题中使用公式的方法，体现出全概率公式的具体作用，让人们更加容易掌握解决问题的方法。

关键词：全概率公式，概率论，完备事件组

ABSTRACT

In daily life, people often encounter the need to use probability calculation to help the analysis of the situation. When faced with these situations, it's not difficult to find that most of the probability problems to be solved are too complex to calculate easily, even if they have been simplified before being abstracted from reality. Meanwhile,the Law of total probability is often used to solve the probability of such a complex event, it uses the "zero into one" idea to simplify the problem, making complex event probability calculation has a new idea. The purpose of this article is to study the application of Law of total probability in real life, to analyze it in detail through examples, and to use Python programs to simulate probability events to help verify conclusions and deepen understanding. On this basis, it summarizes the methods of using formulas in practical problems, reflecting the specific role of the Law of total probability, making it easier for people to master the methods of solving problems.

Key words: theory of probability,total probability formula,complete event set

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