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## PRSH - Present Analyses and Future Extensions

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## COMS0039-COURSEWORK

### COMS10077-COURSEWORK

**Abstract—**This paper conducts statistical test the exploration PRISM algorithms that is an underlying mechanism for trading in simulated trader platforms based on Limit order book running continuous double auction, termed as Revised Stock Exchange (RSE). We aim to explore the existing algorithms under different parameters and further evaluate or extend the algorithms based on parametric or novel approach. The test for exploration, evaluation and extension would consist of trials to implement and execute the algorithm, appropriate visualization of the execution, comparison between different parametric test and evaluation tests and the proposal for extension based through analysis data and results.

**Index Terms—**Automated trading, Financial Markets, Adaptive Trader-Agents, Optimization, Multi-armed Bandits, Visualization, Dashboard.

## 1. INTRODUCTION

British Stock Exchange, or BSE, is a minimal simulated solution of a limit-order-book financial market that runs on continuous double auctions. BSE incorporates numerous features that are characteristic of the real financial markets virtually. [1]BSE includes classic order execution strategies like ZIC and ZHP and also some "bourse strategies" known as GVOB and ZOB. The trader-agent groups in BSE are categorized into three types: the group of "Value of Money" (GoM) & GoS & GoS for simulating financial exchange markets. [2]BSE has been modified with numerous trader-agent groups including the group of "Value of Money" (GoM) and PR33. Some of these trader-agents are pre-coded, others can be imposed or coded for specific experimentation and analysis. [3]PR33 and PR32 are the two trader-agent groups that were modified into the British Stock Exchange in 2001. Parameterized Response-Zero-Intelligence or PR22 and Parameterized Response-Zero-Intelligence or PR23 are two trader-agent groups that were added to the BSE in 2002. The work on the trader's strategy value or  $v$ . The value of  $v$ , determines the strategy of the trader-agent and can mimic any strategy that works like a limit order, a market order, or any hybrid mix of those strategies depending on the value.

PR22 acts an initial value for  $v$ , or trader's strategy, and PR23 acts as a value for  $v$  that is determined by the trader's order or extrinsic. This characteristic of the market conditions and movement. This specificity of PR22, hampers its efficiency in trading in the market. PR23, on the other hand, is more efficient as it sets  $v$  as a specific market's strategy.

## II. BRISTOL STOCK EXCHANGE

**A. Loan Order Book — LOB**

In any functional market, there must be both buyers and sellers. Buyers are basically customers that are willing to buy, and sellers are merchants that are willing to sell or make trade, at a price that makes sense to either parties. For the trade to occur, the information regarding the buyers and sellers are gathered together to form an order book. [4]The order book is essential to match buyers and sellers given their requirements.