

# Relational Blockworld

Stuckey, W. M. and Silberstein, Michael and Cifone, Michael (2006) Relational Blockworld.

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## Abstract

We introduce a new interpretation of non-relativistic quantum mechanics (QM) called Relational Blockworld (RBW). We motivate the interpretation by outlining two results. First, the canonical commutation relations for position and momentum can be obtained from boost and translation operators, respectively, in a spacetime where the relativity of simultaneity holds. Second, the QM density operator can be obtained from the spacetime symmetry group of the experimental configuration exclusively. We show how QM, obtained from relativistic quantum field theory (RQFT) per RBW, explains the twin-slit experiment and suggests the need for an organizing principle fundamental to QM and RQFT. We conclude by resolving the standard conceptual problems of QM, i.e., the measurement problem, entanglement and non-locality.

**Keywords:** blockworld, non-relativistic quantum mechanics, measurement problem, entanglement, non-locality, twin-slit experiment

**Subjects:** [Specific Sciences: Physics: Relativity Theory](#)  
[Specific Sciences: Physics: Fields and Particles](#)  
[Specific Sciences: Physics: Quantum Mechanics](#)  
[Specific Sciences: Physics: Quantum Field Theory](#)

**ID Code:** 3251

**Deposited By:** [Cifone, Michael](#)

**Deposited On:** 20 March 2007

**Additional Information:** under review at International Journal of Theoretical Physics for inclusion in a special issue for the proceedings of the 8th biennial International Quantum Structures Association meeting held in Malta.