

**Non-locality, non-signaling and local commutativity in quantum mechanics and general probabilistic theories**

Quantum mechanical correlations cannot be understood on the basis of local properties quantum systems possess prior to and independent of measurements. This "non-locality" is a central feature of quantum mechanics and though it cannot be used to send information faster than the speed of light it is a powerful resource in the fledging research field of quantum information. However, the strength of nonlocality allowed by quantum mechanics is limited. It is known that there exists a class of generalized probabilistic theories which are more non-local than quantum mechanics and yet do not allow for superluminal signaling.

Identifying the physical principles which underlie quantum mechanics and limit its non-locality is now one of the central problems in foundational research and will be the central theme of this project.

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