DETECTIONS OF INCOMPATIBLE PROPERTIES WITHOUT ERASURE

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Abstract. In a typical double-slit experiment, we seek for properties incompatible with Which Slit property, which can be detected without erasing the information about which slit each particle localized on the final screen passed through. It is found that these properties exist if the dimension of the Hilbert space describing the position of the particle is at least 4, but they can have a non-trivial character only if such a dimension is at least 6. An ideal experiment realizing this non-trivial detection without erasure is designed.