

研究室名	上出哲広研究室 論文発表
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題名	Some properties of first-order Nelsonian paraconsistent quantum logic
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概要	<p>In this study, several desirable properties of a novel logic called first-order Nelsonian paraconsistent quantum logic are investigated. To investigate such properties, a single-antecedent/succedent sequent calculus NL for this logic is introduced. This logic is regarded as a combination of both Nelson's paraconsistent four-valued logic and Dalla Chiara and Giuntini's paraconsistent quantum logic. The duality and cut-elimination theorems for NL are proved. The decidability, several constructive properties, several constructible falsity properties, the Craig interpolation property, and several uniform and dual-uniform provabilities for NL are shown. The constructive properties that are studied consist of the conjunction and universal properties, which are the duals of the standard disjunction and existence properties, respectively. The constructible falsity properties that are discussed consist of the constructible falsity properties with respect to negated disjunction and negated existential quantifier. These constructive and constructible falsity properties and the dual-uniform provability are regarded as characteristic properties of NL, because these properties do not hold for the standard paraconsistent logics. Furthermore, an extension of NL is constructed from NL by adding several naive comprehension rules from the naive set theory. It is shown that this extended system is consistent, and Russell's (like) paradox does not imply the inconsistency of this system.</p>