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Lattice logic, bilattice logic and paraconsistent quantum logic: A unified framework based on monosequent systems

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概要

Lattice logic, bilattice logic, and paraconsistent quantum logic are investigated based on monosequent systems. Paraconsistent quantum logic is an extension of lattice logic, and bilattice logic is an extension of paraconsistent quantum logic. Monosequent system is a sequent calculus based on the restricted sequent that contains exactly one formula in both the antecedent and succedent. It is known that a completeness theorem with respect to a lattice-valued semantics holds for a monosequent system for lattice logic. A completeness theorem with respect to a lattice-valued semantics is proved for paraconsistent quantum logic, and a completeness theorem with respect to a bilattice-valued semantics is proved for bilattice logic. Some syntactical properties, including cut-elimination and duality, are also investigated for the monosequent systems for these logics.