Title: Normal $\widetilde{\mathcal{H}}$-abundant cryptographs

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Properties of the Green $\sim$-relations in $\widetilde{\mathcal{H}}$-abundant cryptographs are investigated and the semilattice decomposition of an $\widetilde{\mathcal{H}}$-abundant cryptograph is considered. By using the semilattice decomposition, we will show that a normal $\widetilde{\mathcal{H}}$-abundant cryptograph can be expressed by a strong semilattice of $\widetilde{\mathcal{J}}$-simple cryptogroups. This result not only generalizes the well known theorem of normal cryptogroups given by Petrich in 1974 and also the theorem of super abundant semigroups given by Fountain in 1982. In addition,our theorem extends some of the recent results obtained by Ren–Shum on superabundant semigroups which are orthodox.

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