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摘要 Let $\{\mathscr{R}\}$ and \mathscr{S} be arbitrary associative rings. A mapping φ of $\{\mathscr{R}\}$ onto \mathscr{S} is called a multiplicative isomorphism if φ is bijective and satisfies $\varphi(xy)=\varphi(x)\varphi(y)$ for all $x, y \in \{\mathscr{R}\}$. In this short note, we establish a condition on $\{\mathscr{R}\}$, in the case where $\{\mathscr{R}\}$ may not contain any non-zero idempotents, that assures that φ is additive, which generalizes the famous Martindale's result. As an application, we show that under a mild assumption every multiplicative isomorphism from the radical of a nest algebra onto an arbitrary ring is additive.

关键词 [Multiplicative isomorphisms](#) [Additivity](#) [Idempotents](#)

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Multiplicative Mappings of Rings

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Abstract Let $\{\mathscr{R}\}$ and \mathscr{S} be arbitrary associative rings. A mapping φ of $\{\mathscr{R}\}$ onto \mathscr{S} is called a multiplicative isomorphism if φ is bijective and satisfies $\varphi(xy)=\varphi(x)\varphi(y)$ for all $x, y \in \{\mathscr{R}\}$. In this short note, we establish a condition on $\{\mathscr{R}\}$, in the case where $\{\mathscr{R}\}$ may not contain any non-zero idempotents, that assures that φ is additive, which generalizes the famous Martindale's result. As an application, we show that under a mild assumption every multiplicative isomorphism from the radical of a nest algebra onto an arbitrary ring is additive.

Key words [Multiplicative isomorphisms](#) [Additivity](#) [Idempotents](#)

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