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Title: Approximate identities of ℓ^1-Munn algebras and applications to semigroup algebras

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In this paper, we study the existence of left and right approximate identities of ℓ^1-Munn algebras. We introduce a concept of virtual invertibility as a generalization of invertibility for a matrix. Then we show that having left and right approximate identities of a Munn algebra implies that the related sandwich matrix is virtually invertible. As an application, we investigate approximate amenability over Munn algebras. We present some necessary conditions for the approximate amenability of Munn algebras in a general case. Finally, we apply the results to study the approximate amenability of Rees matrix semigroup algebras.

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