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Type III₁ Factors Generated by Regular Representations of the Infinite-Dimensional Nilpotent Group $B_0^{\mathbb{Z}}$

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We consider von Neumann algebras generated by regular representations of the infinite-dimensional group $B_0^{\mathbb{Z}}$ of infinite, finite-order upper triangular matrices. These regular representations were defined and studied by Alexander Kosyak. They depend on a Gaussian measure on the group of infinite (arbitrary order) upper triangular matrices. A certain condition on the measure implies that the right regular representation is reducible and that the von Neumann algebra generated by the right regular representation is the commutant of the left one. In this case we prove that these von Neumann algebras are type III₁ hyperfinite factors, according to the classification of Alain Connes.