

# New type of equations related to $sl(n)$ algebra

V.S. Gerdjikov <sup>1</sup>, D.M. Mladenov <sup>2</sup>, A.A. Stefanov <sup>2</sup>, S.K. Varbev <sup>2</sup>

<sup>1</sup> Institute of Nuclear Research and Nuclear Energy,  
Bulgarian Academy of Sciences,  
72 Tsarigradsko chausee, Sofia 1784, Bulgaria

<sup>2</sup> Theoretical Physics Department, Faculty of Physics,  
Sofia University "St. Kliment Ohridski",  
5 James Bourchier Blvd, 1164 Sofia, Bulgaria

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We have derived a new family of equations related to a simple Lie algebra  $sl(n)$  using a Coxeter  $\mathbb{Z}_n$  reduction. They admit a Lax representation. We analyze the grading of  $sl(n)$  algebra introduced by this automorphism. The corresponding system of equations are derived and their properties are briefly discussed.