

# **New Efficient Algorithms for Solving a Structured Integer System of Equations**

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The problem of finding an integer solution of a system of linear equations arises in wireless telecommunication applications. Such problems can be solved with the sphere decoding technique, successive interference cancellation technique or their variants, sometimes with the aid of lattice reduction (LR) to improve the condition of the system of equations. In this talk, we shall consider an interesting wireless communication application where the resulting system of equations is structured in that the matrix has clusters of highly correlated columns. For such a structured integer system of equations, we propose several new techniques that give an accurate solution with less number of operations.