

Orthogonal decomposition problem for modular Lie algebras

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Abstract

An orthogonal decomposition problem of Lie algebras over the complex numbers has been studied since the 1980s. It has many applications and relations to other areas of Mathematics and Sciences such as Quantum information theory. The problem may be called Winnie-the-Pooh due to the name of a well-known conjecture for this problem of Lie algebra sl_n .

In this talk, we consider orthogonal decomposition problem over a field of prime characteristic. We define a classical orthogonal decomposition of a modular Lie algebra and construct it for Lie algebra sl_n under some sufficient conditions. Additionally, we analyze for more details of the problem when $n = 2, 3$ and 4 .

The talk will contain three parts: A brief history of the problem and relation with other fields, the Winnie-the-Pooh conjecture over the complex numbers, and the main results of this work for the case of prime characteristic fields.

This is joint work with Y. Meemark.