Rings of definable scalars of Verma modules

Sonia L'Innocente

Department of Mathematics and Computer Science
University of Camerino, Camerino, Italy

School of Mathematics
The University of Manchester, Manchester, UK

sonia.linnocente@unicam.it

This a joint work with Mike Prest [1].

Let sl_2k be the Lie algebra of trace zero 2×2 matrices over an algebraically closed field k of characteristic zero and let $U = U(sl_2k)$ the universal enveloping algebra. We consider the corresponding Verma module $M(\lambda)$ for $\lambda \in k$ and we show that the ring of definable scalars of $M(\lambda)$ is von Neumann regular.

The work was inspired by Herzog's paper [2] in which some remarkable results about the ring of definable scalars are described for the set of finite-dimensional representations of U. It is natural to ask what happens if we replace the set of finite-dimensional representations by the set of all Verma modules $M(\lambda)$ for all $\lambda \in k$.

References

[1] S. L'Innocente, M. Prest, *Rings of definable scalars of Verma modules*, in preparation

[2] I. Herzog, *The pseudo-finte dimensional representations of sl(2, k)*, Selecta Mathematica, 7 (2001), 241-290