A Bavula conjecture

Abstract:

Abstract. As is well known and easy to prove the Weyl algebras $A_n$ over a field of characteristic zero are simple. Hence any non-zero homomorphism from $A_n$ to $A_m$ is an embedding and $m \geq n$. V. Bavula conjectured that the same is true over the fields with finite characteristic. It turned out that exactly one half of his conjecture is correct ($m \geq n$ but there are homomorphisms which are not embeddings).

If we replace the Weyl algebra by its close relative symplectic Poisson algebra (polynomial algebra with $F[x_1, \ldots, x_n; y_1, \ldots, y_n]$ variables and Poisson bracket given by $\{x_i, y_i\} = 1$ and zero on the rest of the pairs), then independently of characteristic all homomorphisms are embeddings.