

# When is a quasi-discrete module quasi-projective?

Yoshiharu SHIBATA, Isao KIKUMASA and Yosuke KURATOMI

Yamaguchi University

*Email:* b003wb@yamaguchi-u.ac.jp, kikumasa@yamaguchi-u.ac.jp,  
kuratomi@yamaguchi-u.ac.jp

In this talk, we firstly introduce the concept “ $d$ -square full” modules related to “ $d$ -square free” modules. A module  $M$  is called  *$d$ -square free* if, whenever its factor module is isomorphic to  $N^2 = N \oplus N$  for some module  $N$ , then  $N = 0$  ([1], [2] (cf.[3])). A module  $M$  is called  *$d$ -square full* if, for any proper submodule  $X$  of  $M$ , there exist a proper submodule  $Y$  of  $M$  with  $X \subseteq Y$  and an epimorphism  $f : M \rightarrow (M/Y)^2$ . Secondly, we show some basic properties of these modules. Finally, using the concept and results, we consider the problem “when is a quasi-discrete module quasi-projective?”

## REFERENCES

1. N. Ding, Y. Ibrahim, M. Yousif, Y. Zhou,  *$D_4$ -modules*, J. Alg. Appl. **16(5)** (2017), 1750166-1–1750166-25.
2. I. Kikumasa, Y. Kuratomi, *On  $H$ -supplemented modules over a right perfect ring*, Comm. Algebra **46(5)** (2018), 2063–2072.
3. D. Keskin Tütüncü, I. Kikumasa, Y. Kuratomi, Y. Shibata, *On dual of square free modules*, Comm. Algebra **46(8)** (2018), 3365–3376.