

**Dual containing cyclic left module  $(\sigma, \delta)$ -codes  
 $Rg/Rf \subset R/Rf$  over finite commutative  
frobenius rings**

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**a joint work with**

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**Abstract**

For a skew polynomial ring  $R = A[X; \theta, \delta]$  where  $A$  is a commutative frobenius ring,  $\theta$  an endomorphism of  $A$  and  $\delta$  a  $\theta$ -derivation of  $A$ , we consider cyclic left module codes  $C = Rg/Rf \subset R/Rf$  where  $g$  is a left and right divisor of  $f$  in  $R$ . In this paper we derive the parity check matrix in the case where  $A$  is a finite commutative frobenius ring using only the framework of skew polynomial rings. Using this result we show that all euclidian and hermitian dual-containing codes  $C = Rg/Rf \subset R/Rf$  can be computed using a Gröbner basis. We illustrate the result for several rings  $A$ , in particular for all rings of order 4.