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**Jason P Bell\*** (jpbell@uwaterloo.ca), Department of Pure Mathematics, University of Waterloo, 200 University Ave. W, Waterloo, ON N2L3G1, Canada, and **Jairo Z Goncalves**. *Free groups and free algebras in division rings of Ore extensions.*

We consider division rings of the form  $D = K(x; \sigma, \delta)$  where  $K$  is a field,  $\sigma$  is an automorphism of  $K$  and  $\delta$  is a  $\sigma$ -derivation of  $K$ . We show that if  $K$  has characteristic zero then  $D$  contains a rank two free algebra over its center. To accomplish this, we use techniques from algebraic geometry and  $p$ -adic analysis. We give some applications and consider the question of when  $D^*$ , the multiplicative group of  $D$ , contains a free non-cyclic subgroup. (Received August 02, 2015)