THE FROBENIUS FUNCTOR
AND RINGS OF PRIME CHARACTERISTIC

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ABSTRACT. Let $A$ be an $m$ by $n$ matrix with entries from a field of prime characteristic $p$. What happens to the kernel of $A$ when we raise each entry to the $p$th power? We will answer this question and consider its generalization to matrices with entries from a commutative ring of prime characteristic $p$. Prime characteristic rings have played an important role in many recent advances in commutative algebra, and we will explore some classical and recent results in the study of such rings.