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Brittney Falahola* (brittney.falahola@huskers.unl.edu), 203 Avery Hall, Department of Mathematics, Lincoln, NE 68588. *Characterizing Gorenstein Rings Using Frobenius.*

We will give two characterizations of Gorenstein rings of prime characteristic using the Frobenius functor in various ways. The first characterization, which only applies for rings which possess a canonical module, states that a ring is Gorenstein if and only if the Frobenius functor preserves the injective dimension of the canonical module. As a result of this characterization, we'll see that in rings possessing a canonical module, the canonical module serves as a test module for when the Frobenius functor preserves injective dimension. The second characterization depends on the existence of a certain finitely generated module M of finite injective dimension for which the Frobenius functor “plays well” with an injective resolution of M . (Received September 12, 2016)