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The Acoustic Analogue of the Reissner-Nordström Metric DA-SITH DE SILVA, KENNY F. STEPHENS II, Hardin-Simmons University — Some analogues in solid state physics allow us to gain a better understanding of certain aspects of gravity. A canonical acoustic metric of a Bose-Einstein condensate based on the Schwarzschild metric has been developed [M. Visser, "Acoustic black holes: Horizons, ergospheres, and Hawking radiation," Class. Quant. Grav. **15**, 1767 (1998) [gr-qc/9712010]]. We extend that approach to the Reissner-Nordström metric. To do this, we start by looking at a test charge in a plasma described by a Bose-Einstein condensate scalar field. The resulting potential, a modified Yukawa potential, is then used to determine an acoustic analogue of the Reissner-Nordström metric. We anticipate that this approach will yield a testable description of the analogue model.

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