Charged particles in the Reissner-Nordstrom geometry DONATO
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"Sapienza" — The multiyear problem of a two-body system consisting of a Reissner-
Nordström black hole and a charged massive particle at rest is here solved by an
exact perturbative solution of the full Einstein-Maxwell system of equations. The
expressions of the metric and of the electromagnetic field, including the effects of
the electromagnetically induced gravitational perturbation and of the gravitationally
induced electromagnetic perturbation, are presented in closed analytic formulas.
Particular attention is given to the analysis of the lines of force of the system formed
by the black hole and the naked singularity describing the test particle. The new
general relativistic effects leading to an electric Meissner effect are explored.

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