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Van der Waals Plasma Universe During Reissner-Nordstrom Expansion VESSELIN GUEORGUIEV, Cal State Univ-Stanislaus, EMIL PRODANOV, ROSSEN IVANOV, Dublin Institute of Technology, Ireland — A two-component gas, consisting of ultra-relativistic "normal" particles with specific charge q/m and "unusual" particles with ultra-high charge Q and ultra-high mass Mdescribed by a Reissner–Nordström metric, is conceived as a van der Waals gas model of a plasma in early Universe. The model gives rise to an expansion process, Reissner-Nordstrom Expansion, that is analogues to a cosmic expansion during the radiation-dominated era. The Reissner-Nordstrom Expansion is due to the presence of a region with "gravitational repulsion" of the Reissner–Nordström metric with respect to the "normal" particles with $sign(Q)q/m \geq -1$. The expansion era naturally ends at recombination. We discuss the equation of state of the two-component van der Waals gas and the range of model parameters within which the proposed expansion process is consistent with the restrictions regarding quantum effects.

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