

General Relativity and Quantum Cosmology

The Coulomb solution as a coherent state of unphysical photons

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(Submitted on 9 Jan 2010)

In the context of the problem of what micro-states are responsible for the entropy of black holes, we consider as a physical toy model the electromagnetic Coulomb solution. By quantizing the electromagnetic field in the presence of an external source of charge Q , the quantum state corresponding to the Coulomb solution is identified as a coherent state of longitudinal and temporal photons in a Hilbert space with negative norm states.

Comments: 5 pages Latex file, Proceedings of the 2nd School on Quantum Gravity and Quantum Geometry, Corfu 2009

Subjects: **General Relativity and Quantum Cosmology (gr-qc)**; High Energy Physics - Theory (hep-th)

Report number: ULB-TH/10-01

Cite as: [arXiv:1001.1387v1](#) [gr-qc]

Submission history

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