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Positronium decay in a strong magnetic field

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Based on the relativistic constraint technique[1] for the Dirac equation in the two-particles problem[2] positronium states in a strong uniform magnetic field are studied. The width of the singlet positronium state in such conditions is obtained in the explicit form. It is shown that the magnetic field sufficiently increases the decay width, comparing with the case of a free positronium. The positronium collapse[3] in the extremely strong magnetic fields is discussed.

[1] A. M. Dirac, Lectures on Quantum Mechanics (Yeshiva University, Belfer Graduate School of Science, New York, 1964).

[2] H.W. Crater, P. van Alstine, Phys. Rev. D, v.36, 3007 (1987).

[3] A.E. Shabad, V.V. Usov, Phys. Rev. Lett., v.96, 180401 (2006).

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