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**Coherence Lifetimes in the Charge Conserving Systems Due to the Thin Spectrum** EVREN KARAKAYA, OZGUR MUSTEAPLIOGLU, Department of Physics, Koc University, Sariyer, Istanbul 34450, Turkey — We study the quantum coherence properties of the systems characterized by the damped harmonic oscillator using a toy model and thin spectrum model formalism. The decoherence time in the ground state, taken as a symmetry breaking state, is investigated. Apart from the number conserving systems, it is shown that the time that a system can stay quantum coherent exhibits a general characteristics in such symmetry breaking systems due to anomalous spectrum which was not considered before in the charge conserving systems [1,2]. Our results would be interest to the studies in the optical physics, in the condensed matter physics and even to the neurophysical model of the memory. References: [1] T.Birol, T. Dereli, O. E. Mustecaplioglu, L. You, Phys.Rev.A 76, 043616 (2007). [2] J. van Wezel, J. van den Brink, J. Zaanen, Phys. Rev. Lett. 94, 230401 (2005).

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