Pauli-Zeldovich cancellation of the vacuum energy divergences, auxiliary fields and supersymmetry

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We have considered the Pauli-Zeldovich mechanism for the cancellation of the ultraviolet divergences in vacuum energy. This mechanism arises because bosons and fermions give contributions of the opposite signs. In contrast with the preceding papers devoted to this topic wherein mainly free fields were studied, here we have taken their interactions into account to the lowest order of perturbation theory. We have constructed some simple toy models having particles with spin 0 and spin 1/2, where masses of the particles are equal while the interactions can be quite non-trivial.