Speeding up the universe using dust with pressure

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We revise the concordance model assuming dark matter with pressure mimicking the dark energy action. In particular, we propose a scalar field Lagrangian for matter using a constraint provided by the introduction of a Lagrange multiplier. We also add a symmetry breaking effective potential accounting for the classical cosmological constant problem. Investigating the conserved Noether current due to a shift symmetry, we show that our Lagrangian turns out to be independent from the scalar field. Further we find that a positive Helmotz free-energy naturally leads to a negative pressure without introducing by hand a cosmological constant. To face out the fine-tuning problem, we investigate two phases: before and after transition due to the symmetry breaking. We propose that during transition the dark matter sector cancels out the effects due to quantum field vacuum energy. This process leads to a negative and constant pressure whose magnitude is determined by visible matter only. The numerical bounds over the pressure and matter densities are in agreement with current observations, alleviating the coincidence problem. Finally assuming a thermal equilibrium between the bath and our effective fluid, we estimate the mass associated to the dark matter candidate. Our bounds seem to be compatible with the most recent predictions over WIMP masses for fixed spin and temperature.