

Answer to the referee report

Paper PoS (QG-Ph) 040, by C.M. Reyes, L. Urrutia and J.D. Vergara

1. We have changed the title of the article from *Quantum corrections in the Myers-Pospelov model: a progress report* to *Quantization of the Myers-Pospelov model: a progress report*, thus deemphasizing the subject of quantum corrections, which indeed are not dealt with in the paper. Nevertheless, we provide some related comments in Section 5. In several parts of the manuscript we have made the point that we have performed the quantization at the non-interacting level and that the calculation of interacting processes are deferred for a future publication.
2. We have rewritten the Introduction incorporating, among other remarks, the third paragraph on page 2, where we try to clearly explain the process that we have followed in the construction of the quantum model, starting from the classical MP action.
3. We have rewritten Section 3. changing from a mechanical description to a field theoretical one, in the context of scalar field. Between Eqs. (3.8) and the paragraph after Eq. (3.11) we present a compact summary of the perturbative procedure described in Ref. [8], adapted to the scalar field case, and which will be subsequently applied in the MP case.
4. We devote the paragraph ending Section 3. on page 6 to a rather detailed explanation of the meaning of our previous comment regarding *the suppression of high energy modes in a way consistent with the exact evolution*.
5. The time derivative $q^{(4)}$ appearing in the previous Eqs.(3.5-3.6) was correct because the contribution of the variation $\frac{1}{2}\delta(\ddot{q})^2 = \ddot{q}\delta\ddot{q}$ leads to the contribution $q^{(4)}\delta q$ after integrations by parts. In the new version this is replaced by the contribution $\phi^{(4)}(t, \mathbf{x})$ to the equation of motion, as remarked after the Eq. (3.6).
6. A detailed discussion of the energy scales characterizing the effective model together with the way we deal with the upper limits in the momenta arising from Eqs. (4.10) and (4.29) are given in the last section. There we also propose a prescription to recover standard QED using the interplay between the two scales of the model, which will be relevant to the calculation of radiative corrections, for example. We have also updated the limits on ξ on page 2, after Eq. (2.2).
7. We have introduced minor explanatory changes in the text throughout the manuscript.