Referee 2:

The authors thank the referee for the suggestions and corrections provided.

1. The description of numerical difficulties in obtaining the pseudo-charges is
   detailed, in particular for the 2s AO of the lithium atom. One problem is that a
   singularity appears due to charge repulsion at around r=1 au. This resembles an
   electron-electron cusp and could be interpreted physically, because the charges
   have been defined (although an orbital may be empty) and could be averted by
   explicit correlation factors.

2. Let me comment the CH4 application.

   This uses PPs to replace node-less AOs so it is not a case where the arguments
   developed and illustrated by fid 1 and 2 are actually applied.

3. In below (3), the claim concerning H-atoms is correct but a physical
   interpretation of the PP in this case is missing.

4. So, for CH4 oscillations in the AO basis are not modified by use of a PP. They come
   from defects in the GTO basis as the authors mention.

5. A-why not use an ETO basis? The first term of eq (31) is like an LCAO of Is ETOs.
   The n=2 shell could be compared with simple semi-cartesian Sturmians:

   S(1) = N (s+x+y+z) A(r)

   S(2) = N (s-x-y+z) A(r)

   S(3) = N (s-x+y-z) A(r)

   S(4) = N (s+x-y-z) A(r)

   Here N=1/2 for othonorm functions, A(r) = exp(-(Z_{eff} r)/2 s= (2/a -r) and x,y,
   z are just the Cartesian functions. They are bases for the Irreps a2 (S(1)) and
   t1 (S(2), S(3), S(4)) Z_{eff} is to be optimised and could be given a value from the
   Clementi tables.

6. It is well-known that modest GTO basis sets introduce oscillations, since grad[ρ]/ρ
   is not smooth.

7. The FD finite difference HF seems to cure this and it should be benchmarked
   against ETOs.

8. I would suggest that NaH would be a nice example, with a 10-electron core PP and
   comparison to the detailed study of Li and H.

   This molecule suggestion will be taking into account for further calculations.

9. However, the desired properties are obtained quite well.

   A small point is that a PP is not the same as GGA which is a family of functionals.
   The ABINIT GGA is PBE by default and the PP is calculated within that framework.
   The important point it that it is norm-conserving.

   The referee is absolutetly right.

10. The English is rather poor.

    Misprints have been corrected and awkward sentences have been rephrased.