Dear Sir/Madam,

We are submitting the revised manuscript "Local magnetic order in La_2CuO_4 seen via μ^+SR spectroscopy" by V.G. Storchak *et al.*.

In the following we answer the questions/comments/recommendations raised by the Referees.

Reply to comments of Referee 1.

1. Indeed, one of the determined muon stopping sites is located somewhat closer (0.5 Å) to the apical oxygen atom than expected from the typical 1 Å, O-H bond distance. However, this is true only if one assumes that the apical oxygen remains in the same position as in pure La_2CuO_4. Muon is a large defect and apical oxygen atoms are known to be loosely bound. Therefore, a relatively large shift of the apical oxygen position is inevitable. To avoid confusion we added a remark to the description of Figure 5 explaining that atomic positions correspond to pristine La_2CuO_4 without taking into account the perturbation caused by the muon.
2. We agree that not all the characteristic features of μSR spectra of La_2CuO_4 are discussed in the manuscript. As pointed by the Referee, there are two complex issues requiring explanation:
   (a) In high magnetic field parallel to the *c*-axis the splitting of the component antiparallel to the field decreases while the splitting of the component parallel to the field increases; the spin-flop transition decreases the splitting. This effect is not detected with magnetic fields applied along other axes. This complex behavior can be phenomenologically described if one assumes the modification of the tilting angle for the orbital magnetic moments due to their coupling to the canting of moments on Cu.
   (b) Fourier transforms of zero-field μSR spectra of La_2CuO_4 show rather wide peaks and the orbital magnetic moments are not seen. This can be explained as follows. The changes of the magnetic field have different signs for in-plane component and that along the *c*-axis. Therefore, the splitting of the signal becomes small and hence not resolved in our ZF-μSR experiments. This conclusion requires a thorough analysis of models for additional magnetic field and includes tilting of orbital moments similar to that detected in polarized neutron experiments [7,8].
   The refinements of the model do not affect the general conclusions about the presence of an additional source of magnetic field on the muon consistent with Varma model of circulating currents. We believe that discussion of these complex issues is beyond the scope and size of the present manuscript, and it will be reported elsewhere.
3. The misspell in the second last paragraph of page 3 has been corrected.

Reply to comments of Referee 2.

1. Indeed, we do not have space enough to add further details on the calculations. The dipole-field approximation used simply means that magnetic field at the muon site is approximated by a sum of dipole contributions from localized magnetic moments of the whole sample. Following the Referee's suggestion we added a reference (Ref. 16).
2. We agree that the referred sentence is difficult to read. This part of the text is now rephrased.

We are grateful to the Referees for their helpful comments. Thank you for your editorial assistance.

Sincerely,

Vyacheslav G. Storchak
Kurchatov Institute
Kurchatov square, 1
Moscow 123182
Russia