

We thank the referees for their thoughtful comments on our manuscript. We have addressed the points raised, and list the major changes below. In addition, we did some minor editing to meet the 6-page limit, and changed some incorrect numerical values in the text. Our responses below are preceded by “\*\*\*”.

### Referee 1 Comments

(1) Interpretation of muSR: the conclusion about Ca-doped Nd227 is not clear. Is the relaxation of static or of dynamic? Behaviour of  $1/T_1$  relaxation rate similar to the one in Fig. 4 has been observed in Tb2Ti2O7 and the interpretation is dynamical spin fluctuation (J. S. Gardner et al. PRL82, 1012 (1999)). Longitudinal field measurement is the only way to distinguish static vs. dynamic relaxation, but such data is not presented in this manuscript.

\*\*\* We have more clearly described our interpretation of the muSR data for the Ca-doped samples as having dynamical fluctuations due originating from the Nd<sup>3+</sup> moments at low temperatures, based on preliminary longitudinal field measurements (not presented in this manuscript).

(2) Definition of T\_LRO: the referee is most confused with the statement just above Fig.5 and 6: "...T>10K>T\_LRO. We associate the rise in the depolarization rate below 10K with freezing of the Nd<sup>3+</sup> moments." This statement contradicts with the one in the abstract (Ir<sup>4+</sup> T\_LRO~8K for Nd227). It seems that the long-range order of Ir and rare-earth moments are not well distinguished in this manuscript.

\*\*\* This is related to the previous comment, and we have tried to be more clear in our explanation. We have been careful to note in this manuscript (see the introduction) that any reference to long-range order is only relevant to the Ir<sup>4+</sup> sublattice, as in our opinion there is no evidence of LRO on the A-sublattice for any of the pyrochlore iridates.

(3) Title vs. the content: the title suggests Ca-doping is the main issue of this manuscript while magnetism of Ca-doped one is not clear. muSR spectra of Nd227 and Sm227 are similar and both are different from muSR in Yb227; to relate this observation to the title, carrier concentration of these three has to be characterised. The referee suggests that the author should re-consider the title.

\*\*\* We agree, the substance of the manuscript has changed since we submitted the title for our abstract/paper; the title has been changed accordingly, if this is acceptable to the editors.

(4) Magnetic susceptibility: given the full moment size and the observed magnetisation, the weakly ferromagnetic component observed below T\_M might well be interpreted as Dzyaloshinskii–Moriya(DM)-driven weak ferromagnetism rather than the spin-glass interpretation described in the text. Has the author considered such possibility?

\*\*\* We do not state that the phase observed below T\_M but above T\_LRO is a spin-glass, although we believe based on our muSR data that there is no long-range order. We have however mentioned the possibility of weak FM below T\_M in our introduction.

## Referee 2 Comments

Some comments/questions/suggestions:

1) The presentation of the figures should be improved. Using different symbols for different samples makes it easy to distinguish them.

\*\*\* We have reviewed our figures to ensure that the color-coding for the sample data are consistent in the figures we present; since this is an online journal, we believe color coding is the best way to distinguish data set. We tried using different symbols, but the figures are simply too small to distinguish them – in retrospect, we have included too much data/material for a 6-page conference paper.

2) In Fig. 2, the ZFC and FC magnetization curves match each other below 10 K in the compounds Nd<sub>1.94</sub>Ca<sub>0.06</sub>Ir<sub>2</sub>O<sub>7</sub>, Nd<sub>1.94</sub>Ca<sub>0.06</sub>Ir<sub>2</sub>O<sub>7</sub>, and Nd<sub>1.9</sub>Ca<sub>0.1</sub>Ir<sub>2</sub>O<sub>7</sub>. Some possible explanation for this behavior should be given in the manuscript.

\*\*\* This is not fully understood, but we suspect the origin lies in the interactions between the Ir<sup>4+</sup> and Nd<sup>3+</sup> moments, and have added a statement indicating this.

3) The authors say that the zero-field magnetization data below 20 K was fitted using Curie-Weiss temperature dependence. First of all, no fitting curve through the data is shown in Fig. 2. The second point is that the system is in the ordered state. This means that Curie-Weiss can not be used in this temperature range to extract effective moment. This can be done only in the paramagnetic phase. Unless I missed a crucial point I would thus suggest that the authors include an explanation to make this point clear.

\*\*\* We assume two independent contributions from the ordered Ir<sup>4+</sup> and paramagnetic Sm<sup>3+</sup>. In the text we more carefully explained this as follows: “Assuming that the ordered Ir<sup>4+</sup> moments give a nearly temperature independent contribution to the DC susceptibility at low temperature in addition to the paramagnetic Sm<sup>3+</sup> contribution, we fit the zero-field cooled data below 20 K to a Curie-Weiss form including an additive constant.” Since the submission of the original manuscript, we have received a new SQUID system at Boston College. We have taken more complete data for Sm<sub>227</sub> in the range  $1.8 < T < 20$  K; this new data has been put in the manuscript. The qualitative results of fitting this data are the same as before, but the values of  $T_{CW}$  and  $\mu_{Sm}$  are slightly different. The fit curve is now included in the figure.

4) While it is fairly routine, I think it would be appropriate to explicitly state the fitting function used to extract the  $\lambda$  (shown in Fig 4). In addition, authors show the T-dependence of  $\lambda$  for Nd<sub>227</sub> sample without showing and explaining how the spectrum for Nd<sub>227</sub> shown in Fig. 3 is analyzed. Even there is now fitting line drawn through the points.

\*\*\* We have added the fit function in the manuscript, as requested. We more explicitly stated that the  $\mu$ SR data presented in Figures 3 and 4 for Nd<sub>227</sub> was previously reported in Ref. 10.