

# Revisiting the magnetic structure of $R1/3Sr2/3FeO3$ ( $R = La, Pr, Nd$ ) by neutron powder and single crystal diffraction combined with spherical polarimetry

Tuesday, 29 October 2019 15:00 (30 minutes)

We present our study of a magnetic structure in  $R1/3Sr2/3FeO3$  ( $R = La, Pr, Nd$ ) system, which is interesting because it has a metal-insulator (MI) transition concomitantly with the magnetic ordering. In our previous paper [1] we have shown that the neutron powder diffraction data can be equally well fitted by two different magnetic space groups, namely a canted helical model  $P3_121$  and a collinear arrangement of the Fe-spins  $C2/c$ . The latter model supports the charge ordering, implying that it is responsible for MI-transition. We have performed neutron single-crystal diffraction and neutron spherical polarimetry experiments on  $La1/3Sr2/3FeO3$  single crystals grown by floating zone method, in order to distinguish between the two magnetic models, we proposed. Our single crystal diffraction and spherical polarimetry experiments were able to resolve the above issue, giving the definitive preference to  $C2/c$  [2]. This work was supported by SNF project 200021\_157009, Fei Li has successfully defended his PhD thesis [3].

[1]. F.Li et al., PHYSICAL REVIEW B 97, 174417 (2018)

[2]. F.Li et al., to be published

[3]. Fei Li: Crystal and magnetic structure of  $R1/3Sr2/3FeO3$  ( $R = La, Pr$  and  $Nd$ ), © 2019, doi: 10.3929/ethz-b-000349023

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